EDUCATIONAL REVIEW

DECEMBER, 1902

I

POST-GRADUATE INSTRUCTION IN THE UNITED STATES ARMY

During its early existence the United States Military Academy, situated in the beautiful highlands of the Hudson, languished for want of proper appreciation; but for considerably more than half a century the West Point motto of Duty—Honor—Country, and the principles enunciated there, have served to make its standard of ethics the accepted code of the whole army and to fix permanently the magnificent type of soldier known as the American regular.

The foundation stones of the regular army standard are a firm and frank adherence to the principle of the superiority of civil law, a thoro knowledge of theory, and the highest grade of proficiency in the practical performance of every military duty. It is not enough that each one shall do the best he can, but that he shall know and do what is right. With these fixed principles and a systematic training of the annual accretions to its ranks, it is only necessary that the regular army shall be governed by well-considered laws and regulations, administered thru a proper military hierarchy, to enable it to keep alive the knowledge, traditions, and customs of war, so essential to the safe-guarding of the vast material interests of the Republic.

Arising from the practices and traditions of the British service it was long the custom in our regular army to give wide latitude to, and depend largely upon, drill sergeants, but with the evolution which caused military science to become

XUM

gradually more and more exact, the necessity for the higher education of officers became apparent.

It has long been the established practice at West Point to demand that every graduate shall be proficient in every subject; and carrying this practice out into the military service, it is there demanded that every officer shall be able not only to command according to his grade, but to instruct thoroly all those in the lower grades committed to his charge. It was the development of this idea which brought the officers and men of the regular army to such a state of individual perfection as to secure the highest respect of all foreign observers in the brief war with Spain.

Inasmuch as the service and post-graduate schools were not of sufficient capacity to enable all the young officers to obtain the benefits of those institutions, a system of lyceum instruction was established some twelve or fifteen years ago with a view to better fitting the officers generally for their professional duties. After a fair trial it was made evident to all those brought in close contact with the lyceum methods that their success depended too much upon the personality of the various commanding officers and that no uniformity of results could be expected from the continuance of that system. After a careful study of the entire subject the present Secretary of War, Mr. Elihu Root, decided to abandon the lyceum system and to establish a more comprehensive scheme, under which every officer entering the service will be required to establish his progressive fitness for the duties of the various grades and that this fitness shall be a matter of record.

There has long been established in the regular army a system of examinations for promotion which have no connection with the scheme of instruction and training recently inaugurated; but the legal machinery in connection with these examinations is expected to play an important part in ridding the service of any officer whose inefficiency may be developed in the progress of the general plan of education and training which has now been firmly engrafted on the army system and recognized by Congress.

The large influx of young men appointed from civil life,

from the ranks, and from volunteers with brief service in the war with Spain, makes it necessary that some methods of instruction shall be systematically carried out, not only to fit them for the grades to which they have been appointed, but to develop the capacity of each with a view to service in the higher grades.

The scheme of fitting officers for their duties recently inaugurated by the Secretary of War may be likened to the university plan of military education. The groundwork of the system begins with the officers' schools at all military posts. The scheme may be best comprehended by quoting from the order which established it:

THE SYSTEM OF INSTRUCTION

There shall be, besides the Military Academy at West Point, the following schools for the instruction of officers of the Army:

1. At each military post an officers' school for elementary instruction in theory and practice.

2. Special service schools:

(*a*) The Artillery School at Fort Monroe, Virginia.

(*b*) The Engineer School of Application, Washington Barracks, District of Columbia.

(*c*) The School of Submarine Defense, Fort Totten, New York.

(*d*) The School of Application for Cavalry and Field Artillery at Fort Riley, Kansas.

(*e*) The Army Medical School, Washington, D. C.

It is intended that all lieutenants shall be thoroly and systematically grounded in all the elementary instruction, both theoretical and practical, involved in their ordinary work with the enlisted men, such as drill regulations, guard duty, target practice, the keeping of the company books, and the duties of the various staff and supply departments. They are also to learn military law, field engineering, military sketching, the duties of troops in campaign, minor tactics, and to acquire a general knowledge of methods, materials, and implements essential to successful military operations. It is recognized that the mere knowledge of theory is of little value to the army officer unless he has the power of practical application. For this reason it is provided that in the various schools officers shall be constantly brought in contact with the men and materials under conditions akin to those of war.

XUM

In general the scheme proposes that after all the officers have been trained at the various post schools for the duties of their grade, their relative merits shall be determined by competent boards of officers, and those who exhibit the most aptitude and intelligence will be reported to the War Department with a view to their detail in the General Service and Staff College for further instruction. It is intended that the officers who exhibit the greatest interest and proficiency in the theoretical and practical courses prescribed for the officers' schools at posts and in the General Service and Staff College shall be given, subsequently, the benefits of the War College course and shall have special consideration for employment in whatever duties their particular abilities may seem to justify.

The General Service and Staff College is not an entirely new institution, but is an enlargement and development of the Infantry and Cavalry School established at Fort Leavenworth under the personal direction of General Sherman many years ago. The regular army owes to this distinguished officer a debt of gratitude for the uniform encouragement which he gave to the theoretical and practical study of the military art in this country.

The rapid development of modern science, as applied to the art of war, caused the establishment some years ago of the various special-service schools which now form an important part of the general system, but they were so ill supplied with funds in the past as to fall short of their possible value. This may be fully explained by the statement that the great post-graduate school for cavalry and infantry officers was allowed only fifteen hundred dollars annually for all supplies, instruments, and materials.

The Artillery School established many years ago at Fort Monroe, Virginia, has for its object the special training of officers and gunners for the modern coast defenses; the intricate machinery of the modern high-power guns necessitates a special scientific training for the economical and proper management of this expensive arm of the service.

The Engineer School of Application embraces a post-graduate course for the honor graduates of West Point, who

are assigned to the Engineer Corps from year to year. The curriculum embraces not only subjects connected with their duties as military engineers, but those required in the performance of the vast and important civil functions performed so creditably by the Engineer Corps in years past in connection with the river and harbor improvements and important surveys.

The School of Submarine Defense pertains to the special branch of Coast Artillery, and is located at the Long Island Sound entrance to New York harbor, where application of submarine defense may be had for the practical protection of our greatest seaport. This school was formerly a part of the Engineer School of Application, but Congress recently transferred the entire land defense of harbors, including submarine mines and torpedoes, to the Artillery Corps. It would have been desirable to have combined this school with the Artillery School at Fort Monroe, but it was recognized that this place was not well adapted to instruction in submarine defense, and that it was impracticable to give a thoro course in this and allied subjects in the brief period of one year allowed for the general course at the Artillery School.

The School of Application for Cavalry and Field Artillery at Fort Riley, Kansas, is, as its name applies, not so much an establishment for the learning of theory as it is for the practical work and combined maneuvers of cavalry and field artillery. The theoretical work of this school is embraced in the curriculum of the post school for officers, but with the manifest advantage to be derived from the assembling of a much larger number of officers than is ordinarily practicable at other posts.

The Army Medical School, in the District of Columbia, is made a part of the general system of army instruction; it is not a school for the general medical education of young men, but the curriculum comprises a post-graduate course for medical officers who have passed their examinations and have been appointed as assistant surgeons. The course is intended to be of only a few months' duration, and has for its object the special instruction of young surgeons in all their army duties, particularly those relating to hygiene and camp sanitation.

XUM

The Army War College, which is located in Washington, has for its object furnishing the opportunity for advanced professional study by selected officers of the higher grades and those graduates of the General Service and Staff College who may be specially recommended for the course. It is not intended that any recitations shall be required at the War College, but every encouragement will be given to selected officers to further develop their talents in the solution of problems of actual practical value to the nation. Systematic study and planning of details for the actual events of war in probable theaters of campaign must prove of great value both to the individual and to the country. To have all conceivable problems of transportation, supply, attack, and defense systematically worked out by specially selected and trained officers is the best preparation possible in peace for war. It is intended that the accepted solutions of these problems shall be filed at the seat of government, available at all times for the use of such armies as may be actually created and employed hereafter in the particular theaters of war considered. It is recognized that this character of work is done in all the more important countries of the world by specially selected officers employed on the general staff, and it is anticipated that the work in the Army War College will gradually prepare a considerable number of officers for the higher duties of such a corps, and that, should they not be called upon to command armies in war, they will at least furnish a grand field from which to select capable chiefs of staff to accompany those generals who may be assigned to command.

The Secretary of War has worked earnestly to bring the officers of the organized militia of the country into active sympathy with this educational movement by throwing open the doors of all the army schools, colleges, and training camps to their participation.

It is fully recognized, in devising this scheme of military education and instruction, that the great and essential point is that each officer shall have his mind so trained that it will act quickly and alertly in all emergencies. It will be useless to train him to make plans which he cannot modify instantly

when an active, aggressive, and energetic enemy upsets his previous calculations. History evinces that the ability to do this marks the difference between the successful and unsuccessful commander, in the long run.

It not infrequently happens that an officer without previous military instruction performs duty in the higher grades in such a manner as to excite admiration; such cases should be considered as the exception and not as the rule, for it is only thru systematic instruction and training that the great working machine which makes the success of armies possible can be developed under modern conditions. A patriotic nation which has not been properly supplied, armed, equipped, and prepared for war is doomed to military discomfiture whenever its armies encounter disciplined and instructed troops in anything like equal numbers. This truth is as old the life of armies, but it possesses more force to-day than at any previous period of history. It may be replied that the Boers proved the converse of this statement, but there can be no doubt that the refusal to acknowledge defeat and the continuance of a guerrilla warfare such as has occurred in South Africa and the Philippines is of no benefit to a nation; on the contrary, it almost invariably results in undue devastation, rapine and loss of life. The consequences of such a course, had it been adopted by the Confederates after Lee's surrender, can only be contemplated with a feeling of horror. With all the bitterness engendered by defeat still rankling in their hearts, the Southerners exhibited the highest type of civilization by discontinuing a struggle which furnished no legitimate hope of success.

There is nothing in this scheme for training officers of the regular and militia forces which smacks of "militarism," a glib and meaningless word in America at all times. The whole scheme results from a fixed policy, with its objective to make our small army as perfect as possible and thereby remove all necessity for maintaining a large one under ordinary conditions.

WILLIAM H. CARTER

BRIGADIER GENERAL,
UNITED STATES ARMY

XUM

II

BALDWIN'S DICTIONARY OF PHILOSOPHY AND PSYCHOLOGY [1]

The magnitude of the undertaking which has been almost brought to completion, and of which we have the first installment in the present volume, calls for an extended review, written, like the Dictionary itself, "by many hands." This preliminary notice, limited to the first volume, is designed primarily to give an account of the purpose and plan of the whole and only secondarily to criticise details; yet we shall not wholly shirk the latter responsibility. A final estimate must await the appearance of the two succeeding volumes.

The Dictionary is noteworthy, in the first place, simply as a serious attempt to supply a real need—we should rather say several real needs—of the present-day student of philosophy. Perhaps the attempt was too ambitious; conscious of too many needs at once to supply them all with adequacy. To use a biological figure, with no implied disrespect, it suggests in some ways a cross between a lexicon and a cyclopedia, and consequently comes a little short of being quite satisfactory as either.

But especially noteworthy is this particular attempt by reason of the efficient editorial management under which it has been produced. The name of Professor Baldwin as editor-in-chief was a sufficient guarantee of the comprehensiveness as well as of the acuteness of the work. To all admirers of his

[1] *Dictionary of Philosophy and Psychology*, including many of the principal conceptions of ethics, logic, æsthetics, philosophy of religion, mental pathology, anthropology, biology, neurology, physiology, economics, political and social philosophy, philology, physical science, and education, and giving a terminology in English, French, German, and Italian. Written by many hands and edited by James Mark Baldwin, Ph. D. (Princeton), Hon. D. Sc. (Oxon), Hon. LL.D. (Glasgow), Stuart Professor in Princeton University, with the co-operation and assistance of an international board of consulting editors. In three volumes, large octavo, with illustrations and extensive bibliographies. Vol. I. New York: The Macmillan Company, 1901. xxiv+644 p. $5.00. [Vol. II has been issued since this article was in type.]

extensive erudition and to those familiar with his no less intensive industry, his name was an assurance of the completion, despite every obstacle, of a task enough to make most men despair, but which has happily not sufficed to conquer Professor Baldwin's courage.

The editor has been fortunate in the selection of his collaborators, nearly seventy in all, representing almost to a man the ripest scholarship and highest eminence. Two, by the way, are women, Mrs. C. Ladd-Franklin and Mrs. Henry Sidgwick. Among the consulting editors there are four each for French and German terminology respectively, and three for Italian. Of the rest, about one-third are British, about two-thirds Americans. We shall have occasion to mention some of the special contributors below.

The list of collaborators is followed by the Editor's Preface, which is an instructive essay in itself and extremely modest withal. It is, moreover, of importance as suggesting criteria for criticism of the Dictionary, as it takes pains to set forth explicity the design of the whole and the motives which have guided the selection of material. Much criticism is thereby forestalled. But the anticipation of a criticism does not diminish its justice; indeed it would be possible to argue *per contra*, and insist, for instance, that the biographies should have been omitted, rather than deliberately included in their present unsatisfactory form. It is understood indeed that one of the leading counselors of the editor strongly favored this exclusion.

After a general table of contents, and lists of abbreviations, the present volume carries the text thru "laws of thought." The remainder of the text, completing the alphabetical treatment, together with indexes of Greek, Latin, German, French, and Italian terms, will appear in volume 2, while volume 3 will be devoted exclusively to the general bibliographies, prepared by Dr. Rand of Harvard University.

The aim, scope, method, and special features of a dictionary have to be determined in part from the prefatory statement of the editor, and in part also from a study of the actual contents of the work. In what follows we have tried to render a fair,

XUM

albeit a critical, account of these matters. The two objects which were entertained in the Dictionary's preparation are frankly stated at the outset: "first, that of doing something for the thinking of the time in the way of definition, statement, and terminology: and second, that of serving the cause of education in the subjects treated."

The difficulties to be encountered in the execution of the former intention are freely admitted by the editor, who is in an even better position to appreciate these things than are the infallible critics! The relatively "moderate" and "reasonable" task actually undertaken under this head has been "to understand the meanings which our terms have and to render them by clear definitions, . . . and to interpret the movements of thought thru which the meanings thus determined have arisen, with a view to discovering what is really vital in the development of thought and term in one." Yet a candid examination of the result reveals a degree of obscurity in many of the definitions which may have been inevitable, but which is nevertheless unfortunate. This has arisen in large part out of the wide generality of certain terms, a generality scarcely admitting of their subsumption under more inclusive categories. It is, perhaps, not fair to expect a satisfactory definition of a term like "consciousness," or a term like "being"; altho a frank confession of failure, together with a more encyclopedic discussion (in view, especially, of the method of the work elsewhere), might have proved useful. There is no mention of "self-consciousness" under the one term, or of "non-being" under the other. While no effort has been made to suggest new terms or to enforce novel usages, authority is deliberately invoked and justified as a legitimate and salutary social force (viii).

The educational purpose already mentioned obviously has an important bearing on the scope and in part also on the method and certain special features, *e. g.*, the select bibliographies. This purposeful adaptation to a concrete class with special needs accounts for the inclusion of much which might not be supposed to have a logical place in the work. A dictionary which "aims to fit the student to approach the

problems as well as to explain to him the possible solutions of them" must furnish a varied apparatus, indeed, if it would fulfill its propadeutic function.

A word now as to the actual subject-matter of the Dictionary. This comprises philosophy and psychology, together with a large group of allied and ancillary sciences, as indicated on the title page. It may be said, however, that many of these terms properly belong to philosophy as it is conceived by the editor, who defines it as "the attempt to reach statements, in whatever form, about mind and nature, about the universe of things, most widely conceived, which serve to supplement and unify the results of science and criticism." This conception will be seen to embrace the philosophy which Spencer has defined as the unification of the sciences, as well as the fundamental criticism of experience and knowledge with reference to the ideals of human life. Thus philosophy itself, in the former aspect, must include necessarily a number of conceptions which we are in the habit of calling scientific, and in the latter aspect it cannot afford to remain ignorant of these concepts, if it would successfully adjust them to its own ideal standpoint. "It is one of the safest sayings of philosophy, at the close of the outgoing century, that whatever we may become to end with, we must be naturalists to begin with—men furnished with the breast-plate of natural knowledge" (ix). This is an admirable motto, which may well serve to explain and to justify one of the most significant parts of the project. The liberal representation of the natural sciences reflects one of the profoundest features of the *Zeitgeist* and is an earnest of a fruitful reunion of two great endeavors of the human mind in the common search for truth after a long and profitless divorce. From the educational point of view, it is well that a great many terms which the reader of contemporary discussions encounters daily may here be found, although the terms in question may not be properly philosophical *an und für sich*. Another characteristic tendency which is rapidly gaining ground, namely, the tendency to give due prominence to the social sciences and to apply the results of investigation and speculation to the affairs of practical life,

is reflected in the inclusion of so large a number of terms in modern casuistry. We are even told at some length why "gambling" is wrong and are otherwise edified anon.

Coming now to the distribution of the departments represented and speaking in a very general way, it may be said that philosophy and psychology are granted the most prominent place and are, on the whole, treated in a satisfactory manner. Two serious deficiencies under philosophy will strike the historical student. The terminology of ancient and mediæval, especially scholastic, philosophy is extremely meager and avowedly so, because of the limitations of space on the one hand, and a change of front in philosophy itself on the other—the "facing of philosophy towards science and modern life, instead of towards logic and ancient life." With the latter defense in mind, however, it is less easy to excuse the inadequacy of treatment in respect of those logical, epistemological, and methodological conceptions which have quite recently come into prominence by the writings of such men as Mach, Ostwald, Petzoldt, and many others. It may be said that while the philosophical articles are good as a rule, they are not treated with such an approximation to uniform excellence as are the articles in psychology (apart from a defect to be noted). The editor and Dr. Stout, either singly or jointly, are responsible for most of the terms in psychology, especially in its general, analytic, and genetic aspects. In these fields may be found discussions, discriminations, and suggestions of the highest value, including some original recommendations (*e. g.*, the distinction between "psychic" and "psychological"). Altho the included experimental articles are carefully written, yet in view of the professed plan and purpose of the Dictionary, the incompleteness of this department is strangely conspicuous. Ethics and anthropology, on the one hand, with mental pathology and neurology, on the other, take second rank. The prominence given to the practical virtues and vices, especially in the articles by Professor Sorley, is, we think, fortunate, seeing that ethics as taught in our universities has, in its high and dry formality, been as remote, to the ordinary consciousness of the student,

from the problems of daily conduct as it has been indifferent to scientific method. The articles on anthropology and mental pathology, for the most part by Professor Jastrow, are, as might have been expected, brought into fitting relation to psychology. The pathological articles are particularly good.

Neurological articles, written chiefly by President Herrick and Professor Herrick jointly, are uniformly of a high order, tho the included number might have been increased to advantage.

Æsthetics seems to have been especially well treated by Professor J. H. Tufts. Most of the terms from the whole field are included and discussed with uniform excellence. The references to literature are equally thoro. While some of the best articles treat of logical subjects, yet the field, as a whole, seems to have been somewhat neglected.

Philosophy of religion is not only given a prominent place, but is made to include theology and even church history to an unnecessary, if not an unwarranted, extent. Most of the articles in volume 1 are by Professor Wenley, who has depended largely upon Herzog's *Real-Encyclopädie,* but has consulted other standard authorities such as Harnack. The relation of the various doctrines, practices, and events to the history of philosophy is made explicit, and this is useful. But nothing similar is done on so large a scale for other analogous departments.

The biological terms, written for the most part by Professors Lloyd Morgan, E. S. Goodrich, and E. B. Poulton, are, of course, well done and are naturally given a prominent place by reason of the editor's special interest as well as the fundamental relation which biology sustains to psychology, but on just what "basis of omission," to quote an eminent American biologist, the editors have proceeded, one is at a loss to see.

Nevertheless in criticising omissions from these outlying fields we must remember that a larger probable error attaches to such subordinate candidates for inclusion than to the terms which belong to the subjects primarily treated, wherefore it might be more gracious to welcome the many extraneous terms drawn from biology and other departments

which have found a place within the sage circle than to complain because all such terms have not been accorded the like distinction.

Sociology and political economy, like physiology, are given quite a subordinate place. Indeed, physiology seems to have been unnecessarily slighted, in view of its importance for physiological psychology and of the prominence given to general biology. Just what good purpose the smattering of philological and legal terms, to mention only these, may serve, we cannot see. Perhaps it is dysteleological—a word not in the Dictionary, by the way. After philology and law follow education and physics with mathematics, taking the lowest rank. These last should, we think, have received more attention; physics and mathematics because of the relation of their fundamental conceptions to philosophy and the application of mathematics to scientific method; education for reasons requiring no statement for the readers of this journal. If we begin with the word "education," we find surprisingly small space given to it, and would suggest that a special article might well have been made of it, indicating its scope and bearings. The articles on education have all been written by Professor De Garmo, and are good as far as they go. Most of the terms included are after all psychological, but having in addition an educational application. The more objective historical-sociological aspect of education is almost entirely neglected, in striking contrast with the corresponding aspect of religion. Words like administration, college, and even curriculum are not to be found. It remains to be said, however, that too much of the jargon of "pedagogy"—in the preceding remark we have not had this in mind—has been abused as a substitute for real thinking, and has served only to fix and perpetuate dogmas which neither express nor illuminate any real facts. Besides, the student of education will not care to consult the Dictionary so much for the terms belonging to his special field as for those belonging to psychology and philosophy, so frequently encountered in the literature which he is obliged to read. In general it may, we think, in all fairness be laid down that the specialist will find the Dictionary least useful in his

own department, most useful in related subjects. The professional psychologist will perhaps find the philosophical terms or even the religious terms and the biographies of obscure saints and scholars of the Church, of quite as much service to him as the psychological terms themselves. The philosophers should be able to fit definite ideas to the bothersome terms with which the psychology of the laboratory has encumbered their already voluminous vocabulary, and some of their number may be relieved to discover that such a prosaically "exact" science may be offset by a somewhat loose vocabulary, when, for instance, they turn to the word "clang," only to find that the doctors disagree irreconcilably, seven tho they be. It will be agreed that this is not merely or strictly a "dictionary of philosophy," but a "dictionary for philosophers." And we would further suggest that it is a dictionary about philosophy for specialists in other fields. The economist, the clergyman, the physician, even the lawyer, to say nothing of the intelligent teacher, are constantly in need of *reliable* information on points coming under the domain of philosophy and psychology, as herein set forth. We regret the inconspicuousness of education, then, not so much because the specialist in education will miss it, but rather because the student of general philosophy will be given no adequate impression of its proper place in the group of disciplines with which he is concerned.

The general method of the Dictionary calls for special comment. The articles are of three kinds: (1) concise definitions, among which many of those on psycho-physics are models of exact statement; (2) similar definitions with additional historical and expository matter; (3) encyclopedic articles, called "special," selected with more or less obvious reference to the professed purposes of the whole.

Of these last, some are unmatchable outlines of their subject-matter; many are useful in "gathering up" the several terms of a group into a connected treatment of the topic to which they belong; most are interesting, instructive, and well worth reading. We take pleasure in praising—not to name all of the best by any means—the following: "Art and Art Theories," by J. H. Tufts; "Cause and Effect," by G. E. Moore;

"Experience," by G. F. Stout, J. Mark Baldwin, and William James; "Hearing," by C. F. Hodge, C. L. and C. J. Herrick, F. S. Ames, E. B. Titchener, and the Editor; "Idealism," by Andrew Seth Pringle-Pattison; "Illusions of Motion and Movement," by H. C. Warren; "Judgment," by J. Mark Baldwin; "Language," by B. I. Wheeler; "Laws of Thought," by C. S. Peirce and C. Ladd-Franklin. The article "Brain" by the Herrick brothers, at once comprehensive and concise, leaves nothing to be desired in the way of neurological accuracy; indeed it may be doubted whether it will be altogether intelligible to the average student of philosophy, so compact and technical is it. While we miss many neurological terms—the very class of terms with regard to which we stand in sorest need of help—in the body of the Dictionary, we find a formidable array of neuronyms in the glossary appended to this article. Yet the neurologist—even the "mere psychologist," to quote a neurological friend—will find the list incomplete.

Professor Royce's longer articles on special terminologies are valuable. The aim has been in each case to discuss the function of "representative terms" in the philosophical system to which they belong rather than to attempt an exhaustive enumeration of terms and definitions of them *seriatim*. To each article is added a "glossary," more accurately an index, of the terms discussed. The discussions of Kant terminology (9 pp., 48 terms) and of Hegel terminology (11 pp., 70 terms) should be especially useful—altho, in the case of Kant, only the first *Critique* has been seriously considered. The summary articles on Greek terminology (8 pp., 36 terms) and Latin and scholastic terminology (11 pp., 57 terms) are conspicuously incomplete, altho they are intended to compensate in reasonable measure for the meagerness of these departments thruout the book.

While the reader of experimental literature will look in vain for many terms, he will in some cases be referred to "Laboratory and Apparatus," where he will find 11 pages, packed with information, compiled by Professors Cattell, Baldwin, Titchener and Warren. Yet we venture to ques-

tion the usefulness of the article, as it stands. An index might improve it. Such departments as Comparative and Individual Psychology should have received fuller treatment.

The shorter expository articles seem, on the whole, the most useful; they are good, bad, and indifferent—exceptionally few, however, being bad. Fechner's law is clearly distinguished from Weber's; one fails to get the clearest impression, however, from the interesting account of henotheism, which omits explicit recognition of an historical confusion between two interpretations. It was, of course, unavoidable that different contributors should have conceived their function differently. It is plain enough that definition has not meant the same to all.

Foreign equivalents in the three principal languages of the continent are given under each term. Professors Morselli and Flournoy are singled out for our especial gratitude in this connection. Here we must defer to the knowledge of the foreign advisers and the judgment of the editors, yet it will surely not be amiss to suggest that a more complete list of synonyms might have been given. *E. g., Descendenzlehre* only is given as the German equivalent of the "doctrine of descent"; *Descendenztheorie* is not mentioned, altho it is in good usage and exactly analogous to the French and Italian equivalents. The promised indexes of foreign words and phrases will enhance the value of the work, especially for translators.

The select bibliographies at the end of each article should be of the highest service to general readers and especially to students. Yet they have not been prepared with equal care.

The want of uniformity in the general method extends to all the details of lexicography, including orthography—but these are perhaps matters which philosophers may despise. There is something to shock the mere scholar on almost every page.

Enough has been said already to show that the Dictionary is not the work of one man. The several articles were assigned to presumably competent specialists, after which they were in most cases perused by one or more consulting editors, and in many cases supplemented or corrected (not to mention those entirely rejected) by the editorial board. The editor-in-chief

has assumed final responsibility for the result—a responsibility which, he tells us, he has used freely. Whether too freely must be left to each student of the Dictionary to decide for himself—a vote of the contributors even would hardly be fair! In a fairly definite way, however, one can discriminate the parts of individual collaborators, as articles and even portions of articles are initialed.

Co-operation is one of the leading, as it is one of the most salutary, features of the work. The mere fact of co-operation gives content to the authority which is assumed, while it conduces to an humble diffidence and deference on the part of the individual reader. "You are one, we are many," the editor reminds us, in words that cannot be gainsaid. Yet the result of co-operation again and again demonstrates how variable usage may be in these fields and how individual and subjective a thing psychology is, in contrast, for example, with physics. At places co-operation culminates in conflict—perhaps our Hegelian friends will not be surprised at this—*e. g.*, in the article "Consciousness of Kind." After a first reading of the article "Heredity," "in which," we are told, "positive views are expressed," requiring the support of more than one contributor, we were led to wonder whether Homer had nodded five times over, or whether too many good cooks had spoilt the broth. Quite apart from the propriety of making "Social Heredity" co-ordinate with "Organic Heredity" the "positive views" apropos of the bearings and alleged consequences of the law of probability—professedly indorsed by all whose initials are subscribed, and therefore presumably understood by at least five gifted minds—seem to have little place in the article. Perhaps a certain degree of haziness is to be expected in a composite photograph—but irrelevancy is quite another matter.

We have already intimated that the biographies are, by admission, the least adequate part of the Dictionary. We do not criticise the omission of living men, interesting and useful as their biographies would be. We mean that relatively little thought has guided either the selection of names or the preparation of the sketches. Here, even far more than elsewhere, the

length of an article gives no indication whatever of its importance—not even inversely! One sentence, probably added by the editor to the enumeration of circumstantial data, characterizes the late Professor Cope's position in a manner altogether admirable, but when we turn to Huxley we find only an enumeration of positions and dates with nothing to suggest his especial claim to a place in the work. Galileo, Laplace, Humboldt, Agassiz are missing. So is Goethe,—yet we are told that Emerson was a Unitarian minister who resigned because he could no longer conscientiously administer the Lord's Supper, that he was a friend of Carlyle (whose biography is omitted), and that he began to lecture in Boston Mechanics' Institute. Six lines are granted to David Hartley—so important in the history of the associationist psychology; there is not even a reference to the article "Associationism," where Hartley is properly quoted at some length. Yet assuredly Hartley is as considerable, if not as interesting a figure as the late Rev. Lyman Hotchkiss Atwater, who long since served by turns in several useful capacities in the then College of New Jersey. When, in addition, three Alexanders of Princeton and two Hodges are wrought in, we get an impression of "local color" more fitting in a novel than in a dictionary. We miss in many of these biographies the references to literature which we have praised in the other articles.

No indication of pronunciation is given, a regrettable loss, we think, which might easily have been avoided. How few lecturers, even among neurologists, conform to the usage which the rules of Latin quantity suggest and the standard dictionaries recommend in the pronunciation of a word continually upon their lips—cérebrum.

We have been characterizing the scope and peculiarities of the Dictionary in rather general terms, nor can we hope within the compass of a single review to do otherwise. Yet a few concrete cases should be added to illustrate our statements.

The range and variegation of the contents may appear from a selection, made almost at random, of one word from each letter: appetite, becoming, chronic, drunkenness, effect, "fluttering heart," grief, hell, introspection, judgment, karma, law.

There is a rather prominent article on "Domesticated Animals," another on the "Humiliation of Christ." Amulet, canonization, Chiliasm, Halacha, and Haggada stand out prominently. Antennæ, cœlom, Entozoa ("a word formerly used for internal parasites") appear. While geometry is included, algebra is not. "Determinants" are defined in the biological sense, at the expense of the mathematical. Embryology and histology find a place, not so anatomy. Ethology is defined only as a moral science, not as a biological, altho it is emphasized in such a standard work as Parker and Haswell's *Text-Book of Zoölogy*. Neither ecology nor æcology is given. Nor chorology. Under ætiology, the biological meaning suggested by Huxley is not given, but it may be found, along with other meanings, under etiology, of which an independent article is superfluously made. On p. 54, under "anthropology," the word is used in this sense, as a caption, and spelled "ætiology." Cosmic emotion, ethelism, energetics, euhemerism, inducto-deductive have been overlooked. Under "idols" (Baconian) we are referred to Eisler's *Wörterbuch*, whereas a brief enumeration of the species would have been so easy. We fail to find the following terms taken from the index of Witmer's new elementary experimental manual:[2] accordant, adequate stimuli, adjustment (of sense organ), amplitude, coordination, diffusion, distinct vision, equivocal (stimuli and figures), false perception, focus, heteronomous and homonomous (homonymous in philology and heteronomy in ethics are given) interference, inversion (of retinal image), etc. This list does not include names of the parts of sense organs and of the nervous system, exceptionally few of which occur, yet enough and such as to compel criticism of the rule. Eye, ear, aqueous humor, cochlea, cerebrum, cerebellum do not occur under their initials, while cerebral vesicles, gyrus, and others do. We miss the "Golgi method" and bipolar (apolar is in). The color theories cannot be found under the names of their authors, yet the James-Lange theory of emotion is given. Other omissions are acuity, adaptive reaction, association-time, discrimination-time, choleric, consentience. Professor Mün-

[2] *Analytical psychology.*

sterberg's *Actionstheorie* and his (psychic) atoms are perhaps too new for inclusion.[3] But "afferent" should be given. There is under "efferent" a reference to it, also to centripetal, but we have failed to find either. This suggests a general remark to the effect that synonyms, antonyms, and companion terms have not received due attention.

Despite the emphasis of recent biological and evolutionary discussion we miss "anagenesis" ("acceleration" is given) and "catagenesis," "anaplasis" and "cataplasis," "assortive mating," "autogeneric" and "heterogeneric," "bioplastology," "biparental," "blastogenic," "chemism" and "antichemism," "chematropism" and "galvanotropism" with their allies ("heliotropism" is given,) "cryptopnoy" "exclusive inheritance," "genesiology," "gerontic," "gonogenic," kinetogenesis, etc., all of which occur in the standard writings of Cope, Hyatt, Loeb, Pearson, or the like.

Bregma, inion, and other anthropological terms are mentioned only in the general articles. Correlation (theory of), deviation, interpolation, fraternity, cofraternity are among the terms used by statistical students of biology, anthropology, and psychology which are omitted. "Frequency" occurs. Accelerator, inhibitory, constrictor, dilator (all used p. 51), augmentor and depressor, compensatory movements, elasticity and extensibility (of muscle), electrotonus and (nervous) impulse are lacking, while other terms less relevant are not, *e. g.*, heart.

It remains to record a few minor inconsequences and errors, chiefly typographical. There is under "Determinism" a reference to "free will controversies" with no article to correspond. The late Thomas Davidson founded his school of philosophy in Keene Valley, N. Y., not at Keene, N. H., as stated (p. 253). In the article "Impulse" (p. 527) the

[3] In a second edition such recently proposed terms as antitypien, antiklinesen, kleronomie, enbiontic, etc., should be given place. See: Beer, Th.; Bethe, A., und v. Uexküll, J. *Vorschläge zur einer Objectiverender Nomenclatur in den Physiologie des Nervensystems. Biol. Centralbl.* XIX. Bd., 1899. No. 15, S. 517 (Also *Centralbl. für Physiol.*, Bd. XIII. 1899, No. 6, S. 138); Ziegler, Heinrich Ernst: *Theoretische zum Tierpsychologie und vergleichenden Neurophysiologie. Biol. Centralbl.* XIX. Bd., 1900. No. 6.

" (q. v.) " after " instinct-feeling " has no place, as we are referred back to impulse without more ado. On page 67 *homo-ousious* should read *homoi-ousious,* as applied to the doctrine of the Semi-Arians. Under " Agnosticism, *Literature,*" the reference to Huxley's *Essays* should include vol. v, which contains the account of the origin and significance of the term as used by himself. W. H. Clifford (p. 296) should read W. K. Clifford; etc.

It is to be wondered that there are so few errors. The proof has been exceedingly well read. And altogether the Dictionary is a handsome piece of book-making—the work of the Oxford press. Type, paper, and margin are all that could be desired; the book is well bound and opens well, altho the cover seems a little light for the volume, which is perhaps a trifle heavier than it might be.

While no other dictionary in the field can bear comparison with this, considered as a whole, there are some, even in English, which will still continue to be of use and some that will remain indispensable. Students have told us that they have received help from their Krauth-Fleming where the present volume has failed them. Eissler's *Wörterbuch* will not soon be supplanted in the field of the history of philosophy. For ready reference, and lexicographical perfection, the *Century dictionary* (here largely drawn upon for words and etymologies) will be more useful. But the Dictionary under review is concerned more with conceptions than with terms as such. The careful student will prefer to consult such works as the new *Encyclopædia biblica,* by Cheyne and Black, Buck's revised *Reference handbook of the medical sciences,* Tuke's older *Dictionary of psychological medicine,* etc., on the special topics of which they treat.

But it is a decided advantage to the beginner and the general student to have several related subjects brought within the compass of a single compendium, and distributed, so to say, in a " fringe of relations " round about the dominant " topic " of the whole. It is a liberal education in itself to turn the pages of Baldwin's *Dictionary of philosophy and psychology.* 'Tis

indeed a pity there is so little likelihood that the *homo unius libri* will choose this book!

In the foregoing pages we have pointed out defects along with excellences, but with no intention of wholesale disparagement. On the contrary, the very importance and general success of the enterprise have obliged us to try and indicate such shortcomings as have appeared to us. The Dictionary can well bear the strain of any criticism that may be urged against it in parts. Besides, the "personal equation" is present in a review no less than in the book itself. Criticism should be impersonal, but free; it should aim at justice, altho it may come short of attaining it. We have spoken freely, yet not without diffidence. Difficult as it is to review a dictionary, it is yet more difficult to edit one. There are almost unsurmountable obstacles to the success of a program like this. Editors and publishers deserve congratulation, and after congatulation encouragement. It is to be hoped that writers in the subjects principally treated will conscientiously consult the Dictionary, altho in some cases with the result of rejecting its recommendations. Such a co-operative effort should be given a fair trial, and all who are interested in the intelligible expression of clear thinking and the correlation of the philosophical sciences should do their proportional part toward the fulfillment of the modest and reasonable hope of the editor, who says, "May the future Dictionary of Philosophy profit somewhat by our labors, and if it profit also by our mistakes, that will be no less a point of justification for our endeavor." To which let us add the hope that the future Dictionary of Philosophy may be the natural outgrowth of this auspicious beginning. *Forsan et hæc olim meminisee juvabit.*

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III

THE TEACHING OF GEOMETRY

1 *The time has come for advance*—Just a hundred years ago, December 15, 1802, was born John Bolyai, the first who, without preliminary mistakes or long struggles and doubts, but by a masterful explosion of pure genius, before he was twenty-one, as he wrote, " from nothing created another wholly new world."

In the broadened spatial universes, the researches, chiefly of the last half century, on the foundations, the principles, of geometry, have given new results as important as unexpected; new instruments and methods of investigation, powerful, deep-reaching; new insights penetrating at last behind the mirrors which for two thousand years had dazzlingly protected from perception both the flaws and triumphs of Euclid's marvelous construction.

It is time now that the creation of non-Euclidean geometry, and the subsequent work of the masters on the foundations and meaning of geometry and science, so fruitful for the theory of knowledge, for Kenlore, should be made fruitful for the general teaching of elementary geometry. Geometry, always relied upon for training in the logic of science, for teaching what demonstration really is, must be made worthy the world's faith. There must be a text-book of rational geometry really rigorous.

2 *Need for a preliminary course*—But such a book will not be adopted for children. One advance which has been safely won, and may be rested on, is that there should be a preliminary course of intuitive geometry which does not strive to be rigidly demonstrative, which emphasizes the sensuous rather than the rational.

America is pushing to benefit by this advance. We have Hill's *Geometry for beginners*, Campbell's *Observational geometry*, including construction of models, Hailmann's *Con-*

structive form work in geometry, of which the preface says, "The purpose thruout is to develop clear geometrical notions, to give skill in accurate construction, to cultivate a healthy æsthetic feeling, the power of visualizing creatively in geometrical design, and thus, incidentally, to stimulate genuine vital interest in the study of geometry." Also we have Hornbrook's *Concrete geometry,* and others of like scope. The field in education is a proper one and has come to stay.

3 *The preliminary must fit the rational geometry*—As to how properly any one of these books covers the field, despite their good intentions, that is wholly another matter, and sends us back post-haste to the desideratum, the rigorous treatise on rational geometry. In illustration I give the following quotation on mechanics from Dr. E. B. Wilson, "The laws of Newton, as stated by him and used for two centuries, no longer satisfy us." This lack of satisfaction is but one of the many similar manifestations of the present state of mathematical instruction and mathematical science. We are no longer content to bear with superficially clear statements which seldom if ever lead into actual error—nor does it suffice to start with inaccurate statements and, as we advance, to modify them so as to bring them into accord with our wider vision and our more stringent requirements. We must from the beginning bring up ourselves and our pupils on, not only the truth, but the whole truth.

How soon the recent researches of Hilbert and others on the foundations of geometry must take their place in elementary text-books on plane and solid geometry cannot be said. But that is purely a matter of time unless some reactionary tendency sets in—and there are some who think it already beginning to set in. At present, however, the treatises and text-books on mechanics are filled with a deal of half scientific, half metaphysical, and generally quite crude discussion of the underlying principles of mechanics.

To show the application, I quote from the very first section of Hill's *Geometry for beginners:* "We cannot define space . . . what space is, where it begins, or where it ends; these are questions which no man can answer." This is a confident

metaphysics, but it would find many enemies. Wise men say that space is a creation of the human mind, entering as a subjective contribution into nearly every experiment. Experience is in part created by the subject said to receive it, but really in part making it. One may define the geometric continuum as an aggregate of points which satisfy certain conditions, geometrically sufficient. One may define geometric space by deducing from its construction all its geometric properties, as we do for the plane, which may be looked upon as a simpler kind of space.

The axiom, "Thru a point we can draw only one parallel to a given straight," Poincaré declares to be a disguised definition:

"§ 17. If a point move always in the same direction, its path is a straight line; if the direction of its motion is continually changing, its path is a curved line."

But what is meant by "motion," "direction," "continuous"?

"§ 32. The straight line which passes thru two points is shorter than any other line passing thru the points, and hence its length is taken as the distance of the points from each other. We all learn as soon as we begin to walk that a straight line is the shortest distance between two points."

As to this hopeless muddle, which has been condemned *ad nauseam*, notice that it is senseless without a definition for the length of a curve. America awaits a "Geometry for beginners" written by someone familiar with the new, penetrating, critical researches in the principles of geometry. Meanwhile every conscientious teacher must better from his own studies the book he is still forced to use. He has no right to dump into a helpless scholar what he knows to be trash. Upon the scientific depends the educational problem.

4 *Discussion before the British Association*—Quite appropriate, therefore, was the discussion on the teaching of mathematics before Sections A and L of the British Association at Glasgow in 1901. In general spirit this discussion was distinctly anti-Germanic, anti-Euclidean, and perhaps is what is referred to above as reactionary. The leader, John Perry, gives some excellent commonplaces, thus, "Now in my experi-

ence there is hardly any man who may not become a discoverer, an advancer of knowledge, and the earlier the age at which you give him chances of exercising his individuality the better," etc. But Mr. Perry need not have waited for his own experience to know this. It is in all the books, notably in Todhunter's *Conflict of studies,* where he argues for the study of geometry because even in its most elementary parts it gives such perennial opportunity and incitement to discovery, and the new discoveries are really so beautiful, interesting, unexpected, important.

What, then, can possibly be the explanation of such sentences from Perry as the following: "But I would like to point out that ours is an altogether foolish way of producing the mathematical master also. To the age of twenty-four one may say that the very brightest mathematical minds of the world are being trained on problems about which there is nothing new, in the study of which there is absolutely no chance of a new discovery." Mr. Perry may of course speak for himself; but this very year in my class a young man under twenty proved that of the great Hilbert's "betweenness" assumptions, one of the five is redundant, and by a proof so elegant as to bring from high authorities spontaneous letters congratulating him and the University on the achievement.

Under Hilbert the young Max Dehn at twenty-one discovered two new systems of geometry, the Non-Legendrean and the Semi-Euclidean, and proved that the treatment of equivalence by cutting into a finite number of parts congruent in pairs can never be extended from two to three dimensions. Even in England, no doubt Mr. Perry is mistaken, as he is in his naïve notion that to use spherical harmonies or Bessel functions is "to be able to start in mathematics at Cambridge just about the place where some of the best mathematical men now end their studies forever."

Mr. Perry has a personal antipathy to "a perfect logical system" "deduced logically from simple fundamental truths." "As soon as we give up the idea of absolute correctness we see that a perfectly new departure may be made in the study of mathematics," and Mr. Perry proceeds to call for the new de-

parture: "Giving him the whole fifth book of Euclid by simple algebra," and so on.

5 *Rigor gives simplicity*—But as Hilbert says: "The requirement of rigor, which has become proverbial in mathematics, corresponds to a universal philosophical necessity of our understanding; and on the other hand, only by satisfying this requirement do the thought content and the suggestiveness of the problem attain their full effect. Besides, it is an error to believe that rigor in the proof is the enemy of simplicity. On the contrary we find it confirmed by numerous examples that the rigorous method is at the same time the simpler and the more easily comprehended. The very effort for rigor forces us to find out simpler methods of proof."

Mr. Perry says, "I wasted much precious time of my life on the fifth book of Euclid." For my own part, nothing ever better repaid me. It is for me the simplest treatment of geometric proportion. Its difficulty comes from trying to insert in it ratio as a number. Says Mr. Perry, "If we begin our study as the Alexandrian philosophers did, with their simplest ideas in arithmetic and geometry, we shall get stale before we know much more than they did." But the late progress of science has been just contrary to what Mr. Perry supposes, so that he may properly be termed reactionary. Legendre attempted a reform in the teaching of geometry, and from that unfortunate reform the world has not yet wholly recovered: witness what Jules Andrade calls "cette malheureuse et illogique definition" (Phillips and Fischer, § 7) —"A straight line is a line which is the shortest path between two of its points."

Legendre did what Perry now recommends, he spoiled the purity and simplicity of Euclid by the introduction of arithmetical procedures and gave the fifth book by algebra. Legendre was tried in France, Italy, America. I was prepared for Princeton College in Legendre. Fortunately for me Princeton was still teaching Euclid. In Italy, Betti and Brioschi made a new translation of Euclid which was officially required, especially with the aim of excluding this intermingling of arithmetic and algebra in the pure geometry.

6 *Exactitude the most important factor*—For teaching, that which is of the most absolute importance is the exactitude of the reasoning, therefore all postulates really used should be explicitly enunciated. But Legendre, besides those he gives, uses many others tacitly. To see how badly Legendre could reason, consult the Introduction to Lobachevski's *New principles of geometry*.

7 *Euclid's unannounced assumptions*—But next, with the new powers of insight given by the non-Euclidean geometry, it was found that even the great master Euclid made unannounced assumptions. Euclid's first proposition is "To describe an equilateral triangle on a given (finite straight line) sect." He begins thus: "Let A B be the given sect. From the center A, with radius AB is described the circle B G D, and again about the center B with radius B A the circle A G E, and from G, the point in which the circles cut," and so on. This assumes that the circles used in the construction intersect. Thus, before the construction can be known to succeed, we must know the following theorem: If A and B be any two given points, there is at least one point G such that A G and B G are each congruent to A B. This theorem may be deduced from a continuity assumption.

But nearly the whole of Euclid can be obtained without any continuity assumption whatever, not even the Archimedes postulate. Euclid therefore starts wrong. His Propositions 22 and 23 "To make a triangle from given sides," and "To make an angle congruent to a given angle," involve a like lemma, that is, involve a continuity assumption. Moreover, since in Riemannian space it is not always possible to construct an equilateral triangle on a given base, Euclid's Prop. 1 needs the theorem that the straight is not closed, is not finite. This involves the consideration of a wholly new set of assumptions, none of which are explicitly given in Euclid. I call them the "betweenness" assumptions.

As a first hint toward their introduction see Halsted's Lobachevski's *Theory of parallels*, p. 12. "§ 3. A straight line sufficiently produced both ways must go out beyond all bounds, and in such way cuts a bounded plane into two parts."

For its application, see the same translation, p. 15, § 17; "Thus we get a triangle A C G, into which the straight E F goes; now since this latter, from the construction, cannot cut A C, and cannot cut A G or E K a second time (§ 2), therefore it must meet C D somewhere at H (§ 3)."

8 *The betweenness assumptions*—This is what is now called Pasch's assumption and is given by Hilbert as his "II 5. Let A, B, C be three points not co straight and *a* a straight in the plane A B C striking none of the points A, B, C: if then the straight *a* goes through a point within the sect A B, it must always go either thru a point of the sect B C or thru a point of the sect A C."

In Hilbert's set, the three other necessary betweenness assumptions are: "II 1. If A, B, C are points of a straight, and B lies between A and C, then B also lies between C and A.

"II 2. If A and C are two points of a straight, then there is always at least one point B, which lies between A and C, and at least one point D, such that C lies between A and D.

"II 3. Of any three points of a straight there is always one and only one, which lies between the other two."

Hilbert's axiom II 4 is redundant, just as is Euclid's "All right angles are equal."

The betweenness assumptions or the infinity of the straight must also be presumed in Eu. I. 16.

But in the very first proposition there is implicit still another presumption, namely that the sect A B is always congruent to the sect B A.

It is said that his despairing of a pure logical proof of this drove Bolzano to abandon the pure logical founding of geometry. And even all this is not all.

9 *Superposition*—Bertrand Russell says the first proposition "presupposes the fourth. We require the axiom: on any straight line there is at least one point whose distance from a given point on or off the line exceeds a given distance."

The fourth proposition is a tissue of nonsense. Superposition is a logically worthless device; for if our triangles are spatial, not material, there is a logical contradiction in the notion of moving them, while if they are material, they cannot

be perfectly rigid, and when superposed they are certain to be slightly deformed from the shape they had before. What is presupposed, if anything analogous to Euclid's proof is to be retained, is the following very complicated axiom, etc.

"The sixth proposition requires an axiom," and so on.

The seventh proposition is so thoroly fallacious that Euclid would have done better not to attempt a proof. In the first place it uses an undefined term in the enunciation, namely, *on the same side*. The definition requires an axiom, etc. (A "betweenness" question.) I. 8 and I. 26 involve the same fallacy as I. 4. I. 12 involves the assumption that a straight having a point within a circle has two points on it.

10 *Mathematical Association committee report*—It is highly noteworthy that the brief paper from which we have just quoted immediately precedes, in the *Mathematical gazette* for May, 1902, the report of a committee of the Mathematical Association which says (p. 168), "No proof of a theorem should be considered invalid by reason of an assumption that a line or an angle may be divided into any number of equal parts." (Away goes the impossibility of trisecting an angle.)

And again, § 9, "Proof of *congruence* by superposition, and, in particular, proof of symmetry about a line by folding should be considered fundamental methods of proof."

"§ 22. That I. 26 be proved by superposition."

"§ 39. That III. 26, 27 be stated as one proposition, and be proved by superposition."

11 *Motion*—This certainly brings us face to face with the question of motion, of displacement. The feeling against motion as fundamental in geometry is a most striking output of the highest, purest, new geometric thought. It belongs essentially to Veronese and Hilbert. Max Simon says it is a fault that Euclid did not include the congruence theorems among the assumptions. In his lectures Hilbert did so include Euclid I. 4. In the *Festschrift* this is slightly modified into assuming that if two sides and the included angle are congruent, the other two pairs of angles in the triangle are also congruent. Does not rigid motion or displacement necessitate as geometric

substratum the presumption that there exist thruout space continuous systems of figures congruent to the figure to be displaced? If so, to attempt to prove by it the fundamental congruences is a *petitio principii*. So must be any attempt to define congruence by motion. Moreover, as Veronese says, the postulate of rigid motion involves complicated conditions, such as that of continuous systems, not at all necessary for the equality of figures.

12 *Congruence and symmetry*—From like constitution of figures in themselves, congruence differs in containing another notion, the like sense of the figures in the space containing them. Veronese holds it necessary, therefore, to establish the equality of figures independently of movement without deformation, to introduce at proper time the concept of sense of figures in the plane and in space, then to define congruent equality (figures of same sense) and symmetric equality (figures opposed in sense). Then the principle of mobility without deformation will find its geometric explanation. Thenceforth it may be used, since it will then correspond to concepts and properties geometrically well established.

In his lectures, Hilbert says of Theorem 18 of the *Festschrift:* "This theorem expresses the existence of a certain reversible unique transformation of space into itself with which we are familiar under the name *motion*. We have here founded the idea of motion upon the congruence assumptions. Thereby we have based the idea of motion on the congruence idea. The inverse way, to try to prove the congruence assumptions and theorems with help of the motion idea is false, since motion cannot be defined without the congruence idea."

13 *The real beginnings*—Instead then of Mr. Perry's dictum, "as time goes on we must begin farther and farther from the real beginning of the subject," we find that at length we may begin from the real beginnings, thus saving immeasurably in simplicity and speed of progress. In his Paris address Hilbert says: "Let us look at the principles of analysis and geometry. The most suggestive and notable achievements of the last century in this field are, as it seems to me, the arithmetical formulation of the concept of the continuum, and the

discovery of non-Euclidean geometry." Mr. Perry seems never, by chance, to have heard of either.

14 *Alfred Lodge on reform*—The same may be said of Professor A. Lodge and Professor Hudson, if we may judge by what is given in a Discussion on Reform in the *Mathematical gazette*, January, 1902 (p. 142):

"Professor Lodge in reply said, Professor Hudson had suggested that the definition of an angle should be the modern one: the rotary one. If you permit this, you could prove Euclid I. 32 as early as you please. For if a line, initially coinciding with A C D, revolve about A thru the angle A and then about B thru the angle B, the angle (B C D) which it now makes with its initial position must be equal to the sum of the angles A and B thru which it has revolved. (Professor Hudson has stated that the exterior angles were shown equal to four right angles by taking three chairs and walking once round them)."

This is the fallacious "quaternion proof" of the indemonstrable parallel postulate. Three different demonstrations of its fallacy are given in my Bolyai's *Science absolute of space*, pp. 65-71. Professor Lodge's paper is otherwise surprising. He says: "The pupil's mental equipment is chiefly arithmetic and algebra, and his geometry should be built on these notions as much as possible. Euclid approached arithmetic thru geometry. We have to do the reverse. I believe we could not do better at the outset than adopt some French text-book as our model. The chief points are: (2) The entire separation of theorems from problems of construction, hypothetical constructions being used in proving a theorem; (4) the adoption of arithmetical notions and algebraic processes; (6) insistence on accurate figures drawn by accurate and practical processes."

15 *The definition of straight as shortest*—"Also I. 24, 25, being obviously related to I. 4, are made to immediately follow it in such of the French books as define a straight line to be the shortest distance between two points." Professor Lodge, then, does not know that the French themselves have repudiated this nauseous pseudo-definition. Of it Laisant says (p. 223): "This definition, almost unanimously abandoned, represents one of the most remarkable examples of the per-

sistence with which an absurdity can propagate itself thruout the centuries.

" In the first place, the idea expressed is incomprehensible to beginners, since it presupposes the notion of the length of a curve; and further, it is a vicious circle, since the length of a curve can only be understood as limit of a sum of rectilinear lengths; moreover, it is not a definition at all, since, on the contrary, it is a demonstrable proposition."

16 *Hypothetical constructions*—Again, to use, in rational demonstrative geometry, hypothetical constructions in proving theorems would be degeneracy. This insidious error has crept into American geometries and is taught by Beman and Smith (p. 70) in the following words: " Note on Assumed Constructions. It has been assumed, up to Prop. XXVIII, that all constructions were made as required for the theorems. Thus an equilateral triangle has been frequently mentioned, altho the method of constructing one has not yet been indicated: a regular heptagon has been mentioned in ex. 93, and reference might be made to certain results following from the trisection of an angle, altho the solutions of the problems, to construct a regular heptagon, and to trisect any angle, are impossible by elementary geometry. But the possibility of solving such problems has nothing to do with the logical sequence of the theorems."

This is a fundamental error. Thus we have already seen that the hypothetical construction of an equilateral triangle not only requires and presumes a whole group of assumptions of which Beman and Smith's geometry is ignorant, the " betweenness " assumptions, but also a continuity assumption unnecessary for the establishment of Euclidean geometry. Hilbert's assuming this construction would have shattered his whole edifice. The tremendous existential import of the construction so glibly assumed, to pass a circle thru any three non-costraight points, will be recognized when I say that in general it is not possible.

If we might assume every three points either costraight or concyclic, we could prove the parallel-postulate.

Says W. Bolyai in *Kurzer Grundriss*, p. 46: " Könnten jede

3 Puncte, die nicht in einer Gerade sind, in eine Sphäre fallen; so wäre das Eucl. Ax. XI bewiesen."

17 *Problems as existential propositions*—Says Helmholtz: "In drawing any subsidiary line for the sake of his demonstration, the well-trained geometer asks always if it is possible to draw such a line.

"It is notorious that problems of construction play an essential part in the system of geometry. At first sight these appear to be practical operations, introduced for the training of learners; but in reality they have the force of existential propositions.

"They declare that points, straight lines, or circles, such as the problem requires to be constructed, are possible under all conditions, or they determine any exceptions that there may be."

18 *Double import of problems*—In rational geometry, what are called problems of construction have a double import. Theoretically they are really theorems declaring that the existence of certain points, sects, straights, angles, circles, etc., follows logically by rigorous deduction from the existences postulated in our assumptions. Thus the possibility of solving such problems by elementary geometry is a matter absolutely essential in the logical sequence of our theorems.

So, for example, if we have rigorously shown that any sect has always trisection points, this demonstration infallibly furnishes a solution to the problem: to trisect any sect. Now it so happens that without a specific continuity assumption we cannot prove that any angle has always trisection rays.

With the postulate of Dedekind this could be proven, but not with the ordinary postulates, the postulates of Euclid, the straightedge and compasses. Thus any reference to results following from the trisection of the angle would be equivalent to the introduction of an additional assumption. But problems of construction have, on the other hand, always had reference to practical operations, usually for drawing on a plane a picture which shall serve as an approximate graphic representation of other data and results of the existential theorem.

19 *Use of Figures*—Here we have the question of figures,

whose accuracy seems so important to Professor Lodge. But Bertrand Russell says of Euclid I. 1, "The first proposition assumes that the circles used in the construction intersect—an assumption not noticed by Euclid because of the dangerous habit of using a figure." Said Hilbert in his lectures: "We will in what follows make frequent use of figures, *but we will never depend upon them.* Always must we take care that the operations undertaken on a figure retain also a purely logical validity. This cannot be sufficiently stressed. In the right use of figures lies a chief difficulty of our investigation."

20 *Poisoning from a figure*—A particularly interesting case of poisoning from a figure is the second in my article "Proving the False" (*American mathematical monthly,* May, 1902), because the figure used by Professor Zerr was, as Professor Lodge insists, "accurate." We cannot rely upon what we suppose to be our immediate perception of the spatial relations in even the most accurate obtainable figure. In rigorous demonstration, the figure can be only a symbol of the conceptional content covered by its underlying assumptions. The logical coherence should not be dependent upon anything supposed to be gotten merely from perception of the figure.

21 *Aid from figures*—Yet the aid from figures, from spatial intuition, is so inexpressibly precious that any attempt even to minimize it would be a mistake. The beginner's course in geometry should be largely in sensuous familiarization with the figures, while in rational geometry that treatment of a proposition is best which connects it most closely with a visualization of the figure, while yet not using as if given by the figure concepts not contained in the postulates and preceding propositions.

22 *Graphics*—Our assumption, "two points determine a straight," postulates the existence of a straight as the result of the existence of two points.

This may be taken as authorizing the graphic designation of points and the graphic operation to join two designated points by a straight, and as guaranteeing that this operation can always be effected. Confining ourselves to plane geometry, on the basis of assumptions we authorize the graphic operation

to find the intersection-point of two coplanar non-parallel straights, and guarantee that this may always be accomplished.

To perform practically these graphic operations, that is for the actual drawing of pictures which shall represent straight lines with their intersections, we take as granted the use of a physical instrument whose edge is by hypothesis straight, namely the straightedge, or ruler.

Such graphics Veronese considers as a practical application of rational geometry, and admits for it an additional postulate, that of motion without deformation, saying, "the postulate in question is precisely one of those which it is necessary to admit as a *means* of constructing practically the figures, but which is not necessary for the abstract geometric construction of these figures."

23 *Arithmetic in geometry*—Finally, Professor Lodge's recommendation for the early intermingling of arithmetic and algebra in geometry has against it the outspoken testimony of every great authority. In fact Sophus Lie concludes, that "geometry shall in its different stages so far as possible be established purely geometrically, that is a requirement to which surely everyone will subscribe."

Hilbert's position we have already indicated. Says Veronese, "Let us consider now what are the modes of exposition best suited to the teaching of elementary geometry." Even from the scientific point of view the best method is still the geometric method, since it flows from the constitutive process of the intuition of space. Since this intuition is a condition primordial and essential of geometry, to which it furnishes the first geometric objects and their indemonstrable properties, the best method is this which, beginning from these first properties, studies directly the divers elements of the figures so that one can follow step by step the reasoning in having recourse to spatial intuition."

Our own Special Report on Demonstrative Geometry, 1893, says: "Indeed the student is most likely to become a sound geometer who is not introduced to the notion of numerical measures until he has learned that geometry can be developed independently of it altogether. For this notion is subtle, and

highly artificial from a purely geometrical point of view, and its rigorous treatment is difficult. The student generally only half comprehends it, so that for him demonstrations lose more in rigor as well as in vividness and objectivity by its use than they gain in apparent simplicity."

24 *Necessity for non-Euclidean geometry*—On page 58 of Perry's book we see that Professor Lodge's ignorance of non-Euclidean geometry allows him, in his advice, to make actual blunders in elementary geometry. He says: "I believe the theory of parallels would be much simplified if they were defined as lines (in a plane) making equal angles with a transversal, on the same side. The twelfth axiom would still be required as the converse of I. 17, but only in connection with such propositions as I. 44, to justfy a construction." We would be interested to see Professor Lodge's attempt at proving I. 32 without what he calls the twelfth axiom (the parallel postulate).

As Study has said, "Among conditions to a more profound understanding of even very elementary parts of the Euclidean geometry, the knowledge of the non-Euclidean geometry cannot be dispensed with."

25 *The Ideal*—In rigorously founding a science, we should set up a system of assumptions containing an exact and complete description of the relations between the elementary concepts of this science. These axioms are at the same time the definitions of those elementary concepts.

No statement within the science is admitted as exact unless it can be derived from these assumptions by a finite number of logical deductions.

26 *Adaptation to teaching*—To what extent the perfection reached in the pure science by the masters would be bettered by modifications designed to facilitate class teaching and acquirement by immature minds, for example, besides the fundamental postulates scientifically necessary, which of the theorems should also be taken for granted, of course explicitly, this is a matter for the genius, the insight, the tact of the author of the new text-book of rational geometry.

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IV

THE RURAL SCHOOLS OF FRANCE

The seventh volume of special reports on educational subjects issued by the Education Board of England and Wales comprises two reports on rural education in France. The first and most important of these is by Mr. Cloudesley Brereton, whose name is already familiar to many in this country. His report is the outcome of a personal tour of observation thru five departments of Northwest France, comprising a population of nearly two millions; it presents a vivid picture of the life of the people, with the school showing large in the foreground. It is imperative, he says at the outset, "for an inquirer into agricultural education in the rural schools of France . . . to begin by acquiring a sufficiently complete knowledge of French primary education in order to see where the particular part fits in with the working of the whole." He strikes here the keynote of the French system. It is an organic unity, hence in reviewing this report, even at a skipping pace, one must follow the same order—from the whole to the part.

The authority in education is centered in a cabinet officer, the minister of public instruction, but he acts in advice with a professional council, representing all the interests affected. Furthermore, for every new measure he proposes, the minister must secure the sanction of the legislature, so that progress is accomplished by the constant integration of professional and political factors. To the central administration belong the general inspectors, who act as the "eyes and ears and mouthpiece" of the minister as they pass annually over their respective districts. "Anyone," says Mr. Brereton, "who attempts to estimate the influence of the rural schools in France must take into account the steady pressure that the central authority exerts. It is like a 'power station' which, tho often unseen

and at a distance, furnishes no inconsiderable quota to the sum-total of the schools' energy and efficiency."

The centralized power is re-enforced by the peculiar organization of the system. It consists of seventeen academies or scholastic subdivisions, each comprising a university, and classical colleges, and its quota of primary schools. At the head of each academy is a rector, an official of great dignity, appointed by the President of the Republic. He is assisted by a council of university professors, of whom four are his own nominees. The control of the rector extends nominally to all three grades of education, but the university and secondary schools absorb his energies so that the direction of primary education falls upon the academy inspector, "who strikes one as being the pivot between the central power and the schools." Apart from his functions the importance of the academic relation to the primary school consists chiefly in the ideal which it fosters, the sense of a vital relation between the different grades of education that custom and tradition have too widely divorced.

The true unit of primary-school administration in France is the department, a civil district which, for educational purposes, is treated as a subdivision of an academy. In France proper (Algiers excluded) there are 87 departments, which are unequally distributed among the 16 academies; Chambery comprises 2 departments, Paris, the largest academy, 9. The departments also vary in extent and in population; the smallest has 88,000 inhabitants, the largest, Seine, 3 1-2 millions; but large or small, their adoption as units of administration has saved France from the ills, and waste of "district" or "parish" pettiness.

This naturally strikes an English observer, in view of the recent efforts to clear up the educational muddle of his own country by making the county the administrative unit. We also have gone far toward eliminating the small school district, tho few of our States have achieved a uniform, equalizing school administration such as obtains in every French department.

We cannot here follow our author thru the details of the

departmental organization, but those who wish to understand the leveling-up process which has brought even "out-of-the-way French schools" to a high average standard should study this combination of professional and civil authorities (the former always in the majority), the careful adjustment of their functions, the checks and counter-checks, all working smoothly, as Mr. Brereton attests, because "the province of each particular functionary is so clearly thought out and defined that there is no debatable ground over which ambitious rival authorities can wrangle."

It must suffice to note here that the local authority in respect to all school matters, business or scholastic, resides, (1) in the prefect or civil head of the department, (2) in the educational council (4 of whose 14 members belong to the civil council of the department, 2 are primary inspectors, and the remainder teachers elected by their colleagues), (3) in the academy inspector. If the influence of the latter is supreme, it is nevertheless true that he works chiefly by persuasion and prestige.

Besides his routine duties the academy inspector has to look sharply after the application of the great principles of the school law. This is an easier task than it was twenty years ago, when the priest and a large body of the peasants and gentry were hot against the free, secular school, "the school of perdition," as one parish council dubbed it; when parents, under the threats of the clergy, often removed their children *en masse* and lay teachers were "boycotted" and even "stoned." But tho this has changed so that even in the most Catholic departments Mr. Brereton was assured that "any attack on the primary school would be *mal vu* by the population in general"—still the price of safety is vigilance.

Obviously it is impossible that the academy inspector should come into close contact with individual schools; this is the duty of primary inspectors, assigned to each department in the proportion of one to a hundred and fifty schools, a body of experts selected by a rigid examination from the *élite* of the teachers, and subordinate only to the academy inspector. Besides inspecting schools, these officials hold teachers' meet-

ings, conduct the examinations of pupils for the *certificat d'études,* and are not only the living bond between the humble teacher and his august superiors, but a living sign of the possibility of his own ascent to higher things.

The suppression of the small area in the administrative work does not destroy local responsibility, because the law obliges every commune to establish its quota of public schools, no matter how many clerical schools dispute the field, and levies a school tax on all communes for the current school expenditures. The money is collected and disbursed by the state, so that the large communes (or cities) help to equalize the school finances of the smaller. Thus the state pays a minimum salary to all teachers, ranging for full teachers from two hundred dollars to four hundred dollars annually, which is, at least, a living wage.

There is, moreover, a wide margin of optional expenditures which rest upon the communes and appeal to their local pride. The mayors—for even a commune of fourteen inhabitants has its mayor—and local school committees are charged with a round of school duties which give *éclat,* tho they carry no real authority. This combination of unified control with diffused responsibility is exactly what our States are working to, tho by a process the reverse of the French.

Mr. Brereton made his tour of the five departments chiefly on bicycle, hobnobbing with primary inspectors, who travel often in the same way, interviewing academy inspectors, normal and primary-school teachers, peasants, parents and boys, and inhabitants in general. His inquiries were very direct and comprehensive, the conversations were jotted down on the spot, and form not only a lively transcript of the schools and their *milieu,* but a summary of opinions slowly evolved thru daily experience.

Passing over the inquiries as to administration, which is a burning question for England at this moment, and as to teachers, of whom there are, as elsewhere, better and worse, but from the nature of the tests none incompetent, we come at once to the working of the schools themselves, which is the *crux* of a system.

The first particular that confronts us relates to school attendance, which neither the law nor the school machinery has brought to a satisfactory average. In the departments under review the average is higher than for the country as a whole, ranging daily from 70 to 92 per cent. of the enrollment. The manner of keeping the registers really exaggerates the ratio, as the names of pupils who desert the schools in the summer are promptly dropped from the rolls. These children generally quit school to become *patours,* such being the picturesque local term, derived directly from the Latin, for the youthful keepers of sheep. In some districts the school population falls to a third during the season. Minor causes of the exodus are grape-gathering, *haysel,* and apple-picking. To these industrial disturbances is added "the irregular attendance during the week of First Communion and sometimes during the month preceding."

Various remedies have been proposed for the evil. The first which suggests itself is naturally a stricter enforcement of the legal penalties in respect to parents, with the attendant legal processes. This, however, where tried generally, works out badly as the peasants are "ultra-conservative, and local usages and prejudices very strong." The drift of opinion is toward persuasive influences, such as rewards for attendance, and even assistance for families which depend upon the earnings of children.

The problem of school attendance is bound up in a measure with the *certificat d'études,* which can be taken at eleven years of age. The latter, according to the report, has become "in rural districts for pupils, whether they succeed or fail, a signal for departure *en masse.* The category of pupils from eleven to thirteen is thus reduced to an extremely weak contingent, or even to vanishing point. As a mean, a quarter and sometimes a third of the total effective disappears, either to be made use of at home or to be let out to look after cattle."

It is evident that indifference to education has quite as much to do with this exodus as poverty. A school official, cited in the report illustrates the case as follows: "A candidate for the certificate writes, 'In winter one has nothing

to do, so one goes to school.' This child did not suspect he was translating the thoughts of all his comrades in the country, and even of their families. When we happen to meet at the side of the road under a hedge of eglantine three children in charge of a goat, we ask ourselves very seriously if there are not at least two too many. It is these two children we must get into the school by using all possible expedients."

As the certificate exempts from school attendance, the obvious remedy is to raise the age for candidates at least to twelve years. Some of the higher officials are in favor of reducing the obligatory age for full school attendance from thirteen to twelve, with a system of compulsory half-time attendance up to fifteen, an "unconscious imitation," with improvements, of the Robson Act for England.

The studies required in all primary schools of France, city and rural, are about the same as in our own country, with special stress on *la morale* and wider diffusion of elementary science. We are surprised to learn that drawing is neglected in the rural primary schools, and that manual training is practically a dead letter. "I encountered one teacher," says Mr. Brereton, "at St. Aventin (Indre-et-Loire) who had a small bench for practical work, at which he makes models of barrels and such things as are required by vine-growers or agriculturists. The children watch him while at work and try to copy what he makes at home. Above all, he teaches them how to mend tools and implements, a very useful thing for the French peasant, who, being of an economical turn, always tries to do his repairs himself. . . But, as a rule, I found the *travaux manuels* is one of those subjects that has not caught on in the country." Crowded programs and poverty of the communes are the general excuses. One teacher explained that "A little learning is a dangerous thing, and a little manual training, unless on the right lines, only gets the pupils into bad habits, which, a wood-cutter friend of his told him, only makes them worse apprentices than children who know nothing."

Gymnastics and military drill, which figure in the programs, were also generally wanting. The number of school gym-

nasiums in France is actually declining, owing, no doubt, to the extraordinary law which renders teachers liable for all accidents on the spot. In domestic economy, also prominent in the programs, and which from the rural point of view is the most important branch for girls, little is done beyond book lessons, "Nowhere," says Mr. Brereton, "did I come across anything like practical work, either in laundry or cooking.

"It is true that the standard of cooking in France is relatively high, and, as far as my experience goes, it is certainly above the average among the peasants. I have taken 'pot-luck' at the simplest of wayside inns, and even eaten at the board of some of the small cultivators. This appears, after all, only in keeping with their well-known thrift and economy, which causes them to make use of everything. In fact, it did seem to me that the actual need of teaching cookery in country districts, where there exists no artisan population, is as yet not proven."

In neglect of the branches enumerated the record of the French rural school is so like our own as to suggest the operation of common causes. Whatever be their nature, it is only populous communities that so far have been able to develop a vigorous growth of extra branches on the root of the universal elements.

It is quite otherwise with *la morale*, which seems to chime in with the habitual tone of country life. "I was present," says Mr. Brereton, "at a certain number of *morale* lessons, and was agreeably surprised by the interest the children took in them. . . The clever teacher does not seek to ply his pupils with any cut-and-dry systems of lay theology, but rather treats all these particular lessons as the informal *résumé* and logical exposition of what he is trying to teach at all hours of the day, in creating a moral atmosphere in his class, and making it a school for the will."

One outcome of the instruction is pointedly illustrated as follows: "I was talking," says our author, "to a small boy at Trun, whom the master of the school kindly told off to show me to an hotel. In the course of our conversation, I

discovered that, altho only fourteen, he was a keen sportsman. So, when he spoke of the numerous birds in his father's garden, I remarked to him: 'I suppose you are always potting at them?' 'Oh, no,' he said, 'I never shoot the useful birds. They do no end of good.' And when I asked if his ideas were shared by the other boys, he said that most of the boys in his school thought as he did."

The only general criticism of this instruction is that too much emphasis is laid on the individualistic virtues, to the detriment of the social duties, which are of chief importance. This view was expressed also by the Congress of 1900 which advised that "the new programs direct all instruction toward a social education."

The succession of decrees and the constant remodeling of programs that make up the official history of agricultural instruction in France indicate the difficulty of bringing it to practical results. The celebrated scheme issued by the ministry in 1897 reduced the whole code of the subject to one golden rule, viz., "that the method to be followed should be that of notions of science applied to agriculture and rendered above all things practical." A *résumé* of the scheme and several specimen programs that it has inspired are given in the report before us. It is also made quite clear that the teachers come into the schools with a good working knowledge of the subject, partly because they are recruited in great measure from the peasant class, and partly because of the training in the normal schools.

In general, even with men teachers, the agricultural instruction is apt to be "bookish," altho "the best teachers not only seem to be trying to make their teaching practical, but also to attach it to the local agriculture, of whatever nature it may be, insisting in the grass countries rather on questions of cattle and cattle-feeding; in the arable districts on cereals; in the vine regions on the treatment of the vine. At the same time they encourage the children to form botanical collections; help them to discriminate between the birds and insects useful to agriculture, and its enemies; take them for interesting excursions, and make them record their impressions, and kindle

in them thereby not only an interest in, but a love of, the country-side."

As we have said, the majority of the country children quit school before they reach eleven years of age. How to prolong the period of their instruction is the most serious problem. To comprehend its importance and the efforts that it has recently excited, reference must be made to the economic and social conditions whose analysis forms the most interesting chapter in the report before us.

The five departments visited by Mr. Brereton are essentially rural. Each contains at most a single town, a market town, as it were, of fair dimensions, and scattered up and down the valleys a certain number of small factories, not numerous enough to give the country an industrial aspect. It is only the industries grouped around a center like Lisieux or Flers, both famous for linens and cotton, that are flourishing. Here the workmen earn 3 francs 25 to 3 francs 50 a day; the women, 1 franc 50 to 2 francs, and as they live generally in villages outside the towns, they spend their spare time "in gardening and a little agriculture." Under the pressure of foreign competition the small isolated industries seem doomed to decay, and the prospects of village industries, as hand-loom weaving and even lace-making, like the celebrated point d'Alençon, are darker still. "There are no technical funds available in France for attempting to improve the arts and crafts in rural districts. The *travaux manuels* in the schools are practically of little importance; it is only in the higher primary schools that good work is being done, and here again the pupils are prepared for the big workshop, and not for rural employment."

With agriculture the case is less hopeless, altho the peasants often declare that "it is a shadow of its former self." In every department visited it appears that the value of the land has fallen heavily since 1876. The rental of a small estate of 35 hectares near Lisieux has fallen from 3500 to 2000 francs. Out of this 400 francs are spent on repairs and 800 to satisfy the tax collector. The case is not peculiar.

In respect to the division of the lands the region offers a

striking contrast to England. It is the country of small holdings. In Orne, for example, the majority of the farms comprise from 25 to 37 acres. In Sarthe, the number of proprietors runs into tens of thousands. "When any big estate comes on the market it is bought up by a speculator or syndicate and cut up into small lots that are at once snapped up by the peasants."

The extent and variety of products cultivated is noticeable. Alternation of crops is general; "on the grass lands which are not mown and sold for hay, the farmers go in for dairying, cattle-breeding, grazing, and horse-breeding. In many of these pastoral districts, especially in Calvados and Orne, the meadows are covered with apple trees. This allows the peasant to have two strings to his bow. In a wet year there is plenty of grass and probably a 'shy' apple crop; in a dry year the herbage is poor, but the apple trees are literally bowed under with blossoms." Calvados, rich in corn and other crops, is noted also for its high-class cheeses and its large trade in fowls and eggs. No less than 20,000,000 francs worth of the latter pass every year thru the port of Honfleur on their way to England. In the forest tracts, which are of considerable extent, woodmen and *sabotiers* ply their crafts. The number of possibilities may even be detrimental, as in the valleys of Calvados, where the farmers cannot make up their minds "to definitely take up the breeding of cattle or dairy work," and hence "fall between two stools."

There is also an ultra-individualism which blinds the small proprietor to the benefits of co-operation. "For lack of co-operation," says Mr. Brereton, "the cultivation of colza has been ruined in Calvados"; crushed out "by the competition of American cotton oils." "For lack of co-operation some of the most famous butters in Normandy have lost the position they once held in the market, owing to the difficulty to the public of being sure of securing a butter of a certain quality. On the other hand, in Indre-et-Loire there exist co-operative societies for making and selling butter, with the result that the Touraine butter has already won for itself a name in the market. These people are only copying what has

already been done in Finland, Denmark, and Holland, and what has just been started in Ireland."

But the most serious aspect of the rural problem is "the growing deficiency in labor," which, as in England, "is becoming every day more intense."

One cause of this deficiency is the exodus into towns under the hope of better wages and a less monotonous life. "Half the conscripts," says a French official, "never come back to cultivate the soil." The taste of artificial excitement has rendered rural life unendurable. Undoubtedly, however, the chief cause of the lack of labor is the actual decline in population, which is most marked in the country districts. The effects of conscription, the love of comfort, "the automatic partition of property," all conduce to this decline, but the chief factor, as now generally admitted, is the spread of alcoholism. Fifty years ago France was one of the most temperate countries in the world; to-day, according to a French statistician quoted in the report, it leads all Europe in the consumption of alcohol under its various forms. The causes assigned for this alarming change are the ravages of the vine-phylloxera, and the consequent influx of noxious spirits, the increase in private distilling, and the sale of spirits at the regimental canteens. Under these influences there has grown up a habit of perpetual "nipping," which is sapping the vital force of men, and even of women.

The analysis of the rural problem here barely outlined shows very clearly the points at which education may be hopefully applied. Summarizing in the order of their discussion, the author suggests that for the revival of small industries, "something must be done in the shape of practical work in the schools or in evening continuation classes." In agricultural neighborhoods, where the majority of peasants are also proprietors, "instruction in scientific notions applied to agriculture is demanded." "The spirit of saving, so widespread among the people, should be transferred from an individualistic to a social basis, by substituting everywhere the mutual insurance societies among the scholars, and these societies, together with the associations of former pupils, should further

develop the spirit of co-operation." Recreative evening lectures, which never fail to draw when the magic lantern is an accompaniment, will do much to relieve the long winter evenings in the country from dullness, while to combat alcoholism there is the teaching in the day school and adult classes, enforced by the work of temperance societies. All the agencies named, as the report shows, have been set in motion by the government, but in spite of the admirable organization of the system, and the ardor with which teachers and officials have entered into the effort, it is difficult to sustain these auxiliary works outside the towns. It is, after all, by the steady pressure of systematic education that society must be transformed, and on the educational side the most hopeful outlook for rural France is the recognition of this truth. Hence the new impetus given to the higher primary schools, the efforts to retain pupils by specializing the instruction, the founding of practical schools of agriculture and of farm schools, both closely co-ordinated to the primary schools and answering somewhat to our own land-grant colleges, tho of much narrower scope. Above all should be noted the growing conviction that the gap between primary and secondary education, so called, must be closed up, and the sense of a common national purpose infused into both. This lesson in particular the English investigator commends to his own country. "We shall probably have to copy the French," he says, "in creating schools in waste places, which, as they will cater for a still higher class than those who refuse to enter the French higher primary schools, will have, of necessity, to be christened secondary. We must further recognize, as they, that country secondary education ends at sixteen or at the latest seventeen, and largely modernize the curricula of most of our country grammar schools."

By embracing in one view the threefold aspects of the rural problem—the economic, social, and educational—the report emphasizes the limits of the school while disclosing its highest service as a transforming agent. The rural school is not a panacea for the "ills of the country-side." It has a mission in common with the city school. "Apart from its local obliga-

tions," says our author, "stand its higher duties toward the nation and toward humanity. It strives, as much as it can, within the brief season of the school life, to give the child in a shortened and intelligible manner the experience of the race, because he will one day be a man, and the experience of the nation, because he will one day be a citizen. . . Because time presses and we wish to give the child not merely hearsay knowledge, or charge his memory with a mass of loose and uncorrelated facts, next to forming his character and awakening his intelligence we aim, above all, at equipping him with the tools of learning—reading and writing and ciphering." The successful achievement of this purpose, even in obscure rural districts, is the abiding outcome of the French primary system. Should its admirable organization be effectively used for promoting special agricultural training it would still remain true, as impressively stated by this keen observer in the application of the lesson of this system to the needs of his own country, that "if the pupils on leaving the school do not find a fair field at home for the aptitudes and aspirations" thus developed, the best of them will depart and the bias given by the school "will be simply thrown away."

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V

THE DANGERS AND USES OF THE LECTURE

As a means of imparting information the academic lecture has the approval of centuries, and occupies an important and conspicuous place in modern university teaching. There is a widespread feeling, however, shared alike by teacher and student, that lectures are on the whole irksome and unprofitable. The teacher seeks to interest and to stimulate his class, but finds himself, instead, dictating facts to a hundred note-books. The student looks for guidance; what he too often receives is bare information. Admittedly the attitude of a class should be responsive, not passive; yet a lecturer must often ignore the necessity of preparing the mental soil before him, and cast the seed lavishly upon a barren, because undisturbed, surface. Hence the view has arisen that the lecturer exceeds his province in attempting mainly to impart subject-matter, and should occupy himself chiefly with direction and synopsis, with stimulating and sympathetic leadership, leaving the student to apply the incentive in reading, recitation, and laboratory practice. In emphasizing this view—that the lecture should be primarily a directive, not an informative, agency—I wish to show from the student's standpoint how present conditions indicate the necessity of a change both in the motive and in the plan of lecture instruction.

Many persons are accustomed to look indulgently upon the informative lecture—to regard it as a pleasant and effective means of obtaining knowledge. They themselves prefer to learn by ear rather than by eye. An analysis of this attitude would, I feel confident, show in most cases that those who maintain it have overestimated the amount and value of knowledge gained from lectures as such, and have allowed the stimulus and suggestiveness of attractive lecturing to impart an unreal feeling of acquisition. Acquisition may indeed take place in the subsequent reading of books or, more likely, of

notes. In such cases the knowledge is due to the books and to the notes; the lecture, valuable for what it has actually imparted, namely incentive, is rendered of less value by having as its object something which it can seldom effectually impart, namely information. Thus any lecture, no matter how delightful, which aims primarily to inform, is by virtue of its very purpose hampered in the function to which it owes its value.

It is often asked, "How can one man deal with a class of several hundred students except by means of the lecture?"

"On the other hand," comes the reply, "how it is possible to reach effectively by lecture any class of such overwhelming size?"

The dilemma certainly is perplexing. One thing, however, is certain; it would be as well for instructors to furnish a textbook and to require mere examination on its contents, as to continue with the present wholesale method. It is little profit to a student, sitting in the extreme rear of an auditorium, to note down the detached and elusive shreds which may reach him from the lecture platform. It is little profit to a lecturer, while straining to be heard as the student is straining to hear, to attempt to influence numbers hopelessly beyond his personal grasp. If the necessity for demonstration be involved, the trouble is indefinitely aggravated. The distant, half-seen experiment; the distant, unseen operation; the patient examined in the distance by proxy; the perfunctory inspection and handing on of belated specimens and preparations which serve only to irritate the absorbed note-taker: under these burdens the instruction of large classes by lecture reaches its acme of inefficiency. To be sure, to state a dilemma is no argument. But does not the lecture system, by its very inclusiveness, encourage radically wrong, and with other methods impossible, conditions? With other methods a line must needs be drawn as classes increase in size; with the lecture the only limitation is floor space. Our colleges and professional schools are learning that bulk beyond a certain limit means weakness. Their duty is first to retain classes in some way within educative bounds—then to apply methods which educate.

A great deal of lecturing not only fails to elicit response, but

invites conditions which are a menace to intellectual health and ideals. Given the average lecture course, it is safe to say that a few directions, faithfully carried out, will "pass with credit" any student of moderate intelligence. The recipe is well known to a certain class of tutors, and it is the possibility of thus turning the passing of examinations into an art, which makes the lecture course the favorite among students who wish to attain maximum grades at a minimum expenditure of labor. The reason for this preference is that a well-established method of cramming may be applied successfully to the matter of most lecture courses, and that "marks," far from being the result of continued faithful study, may depend solely upon the extent to which a student is willing to work at high pressure for a few days preceding the examination.

The evil of this sort of cramming needs no exposition. It may not be realized, however, that a similar evil extends to every student to whom lecture notes are the chief means of preparation for examinations. The use which is made of notes after they are once obtained is of exceeding importance to the student. The tyro at note-taking has first to encounter the discouraging fact that notes in college are not, as in the outside world, a word here or a sentence there, entered in a little book for the purpose of jogging the memory, but summaries of solid blocks of lecture matter. He has next the task of learning the use of this formidable mass. If he be wise he will work hard during the lectures, produce day by day a well-arranged text-book, and study it faithfully as the course progresses. It may be a dispiriting task, but it will make the final cram, which in any case is hardly to be avoided, much less of a burden. But some lecturers present especial difficulties to the note-taker. To follow the words of any speaker at all comprehensively in full script is an art, while the recording of some kinds of lecture discourse results in a scrawl legible only to the note-taker himself. Close and important detail is given with voluble ease, and the slaves of the note-book toil like slaves of the galley. It is, truly, largely a physical exercise; and evidence thereof lies in the aching hand and arm. It is *not* an intellectual exercise; for the student has become a note-taking machine,

and at the end of the lecture is about as conscious of mental stimulus as is a short-hand reporter of spiritual elevation at the end of a sermon.

Now the student, realizing the presence in his note-book of a full record, often takes no further thought; he watches the growing manuscript with a light heart, in the knowledge that all may be safely left to a future burst of industry—the examination cram. The better method, however, is a daily renewal of acquaintance with the notes. This may be effected either by diligent reading or by more diligent rewriting; the latter proves almost a necessity if serviceable notes are to be obtained from an almost illegible scrawl. This transcription of notes may require one or two hours of evening work for each lecture. It is a high price to pay, but the result is a neat text-book in the note-taker's own language and hand—far better for his own purposes, if the original notes were well taken, than anything which he could buy. Instructors have been known to recommend this rewriting of notes. They cannot have appreciated the galling sense of time and labor wasted which the practice brings to the student. He feels that work as strenuous could by other methods of learning result in far more mental possession and far less bodily fatigue.

Whether the notes have lain unused, or have been studied or rewritten, the time comes when they or their substitutes must serve in the final campaign. Let us consider the student who desires above all to stand high in his course. He may feel that he already has an intelligent grasp of the subject: but that is not enough; he must get a "high mark," and upon it may depend the scholarship that keeps him in college. The one thing for him to do is to take his notes and go over them again and again, until each page, each paragraph becomes stamped in every detail upon his memory. Each diagram made by the lecturer upon the blackboard, each figure copied from the charts, must be re-drawn until memorized. The student must himself become a compendium of the subject. He may now be fairly sure of passing with distinguished success—but success earned by a method depressing and humiliating to a man of intellectual spirit. To this necessity the scholarship student owes a true

cup of bitterness. It is an excellent system for attaining academic honors, but a wretched system for attaining what honors signify.

Another means of distinction in the art of passing is furnished by the publication of examination papers. Such success is due to the practical identity of examinations given in an annually repeated lecture course. It is strange that instructors fail to realize how far a little ingenuity may go in replacing genuine study. Courses actually exist with accessible examination papers extending back over years—papers of such a nature that an intellectual student can extract from them sufficient intimation of what will be asked to enable him to pass his examination with very little work. The method is a short cut to what the instructor "requires." This resuscitation of past examinations is a time-honored custom among students in lecture courses, and must continue until lecturers appeal to the mind, not to the note-book, and direct their examination at the man and at his thinking, rather than at his memorizing faculty.

A system which thus encourages the art of passing must create for the student the delusion of a royal road. Moreover, the austerity of the informative lecture is not the austerity which develops effort, but is rather indulgence cloaked with severity; and the result is a form of parasitism. Lectures covering a subject in detail are the outcome of extended study and compilation on the part of the instructor; he gathers, systematizes, and places at the disposal of his students what he thinks they need to know. It is food elaborated by professorial industry, found all-sufficient by the student, and taken exclusively as a matter of economy. The student parasite adapts himself readily to this predigested diet: organs of independent acquisition disappear, being useless, while organs for appropriating the elaborated food develop prodigiously; and the process is consummated in the complete acquirement of the art of passing. No matter how much hard, self-denying work is done upon material obtained wholly from lectures, the weakness remains. The student comes to regard the lecture as the source of all knowledge; and the apparent all-sufficiency of lecture information, emphasized by examination,

deters him from independent effort. By avoiding certain subjects a student may complete a college career almost without once entering the library. He has never learned even the meaning of original sources, and is consequently devoid of the power which their use alone can impart. As lecture parasite he thrives as long as lectures thrive, and at the end has earned his merited reward—a surfeit of information; but the faculty whereby alone information is of any worth is rudimentary or wanting. Students taught chiefly by lecture become effectively trained in but one subject—the passing of examinations. As Huxley said, "They work to pass, not to know; and outraged Science takes her revenge. They do pass, and they don't know."

I have endeavored to show how the lecture, employed as a means of information, may prove both an obstacle to effective instruction and an incentive to the wrong kind of learning. The question now arises, How may the lecture, regarded as a directive rather than as an informative method, attain its greatest usefulness?

A further study of the student's attitude toward the lecture will, I believe, furnish in part the answer.

Professor and student do not often exchange opinions on education. The professor grumbles to the faculty, the student to his classmates; each fails to profit by the other's experience. It must not be supposed, however, that the student's protest is wholly passive. He may, indeed, feel himself unqualified for open criticism, and decide that educational matters, at best a weariness to the flesh, are as good as they can be made. But reaction is inevitable. Instinctively he tends to supply for himself certain deficiencies in lecture instruction.

One example of this tendency is seen in the use of "printed notes." These consist in detailed records of the subject-matter of lectures (usually typewritten, but sometimes printed), produced by students who are good note-takers, and sold to those of the class who will buy. Printed notes may suffer official anathema and even legal injunction; they may be, as often reputed, demoralizing: nevertheless they *are used*, not only by

the dead-wood of a class, but in many cases by students who are trying to learn. They are an almost universal accompaniment of the lecture system in American colleges and professional schools, and often furnish a considerable income to the students who compile them.

The conditions which give rise to a demand for printed notes vary with different types of lecture. In some courses, text-books covering a subject either do not exist or else are condemned by the instructor, and authorized subject-matter is thus inaccessible to the student except in the lectures. Forced to depend upon notes of some sort, the student is tempted to fall back upon those which seem the most nearly complete; while absences may render the purchase of notes peremptory. In courses which present a subject in which exhaustive text-books abound, the student faces a somewhat different situation. Here an economic instinct tells him that the time spent in hearing his professor's version of an easily available subject might be better employed in study. But the lecturer's disagreements with the text-book (of minor importance, yet of distinct examination value) weigh upon the student, who seeks in printed notes a safeguard which shall balance all discrepancies. Some lectures of this type are recognized as entirely unnecessary, and hence are quite devoid of notes and note-taking. Attendance becomes a matter more of habit than of duty, and the student absents himself with perfect safety.

There is one kind of lecture course in which the use of printed notes is particularly natural and excusable. The danger involved is one which besets every professor who has a well-systematized subject to treat by lecture. On first compiling his material he writes a set of lecturer's notes, intended doubtless as a temporary makeshift, to be constantly remodeled with the progress of his subject and his change of attitude toward it. For the first few years, perhaps, the notes are molded in accordance with his growing experience: new data are inserted, old methods discarded; and the course, strengthened every year by the lecturer's fresh energy, wins the confidence and rouses the enthusiasm of the students. But years pass; other duties and responsibilities demand the pro-

fessor's best thought, and little by little the course weakens. The lecturer's notes have been proved by experience and are well learned. The data are essentially permanent, and must be repeated annually in order that the subject be well covered. In spite of vigilance the wheels will slip into the ruts of the year before, and year before; until at last the cart rolls on serenely in its own tracks, the occupant scarcely realizing why it all seems so natural, easy, and familiar. The reason is plain. The professor has dropped the reins and Habit has taken them up. Habit now conducts the course and sets the examinations, while the sometime lecturer immerses himself in his studies and executive duties. Students are not slow to discover a transfer such as this, or to seize the opportunity that it offers. The labor of note-taking is unnecessary, for the dictated subject in the form of printed notes fulfills a logical, economic demand. The students have completed what the professor began—the manufacture of a text-book. Some, with the printed edition before them, are amused when the old, old joke appears in its appointed place; others find it hard to suppress a feeling of indignation. The sets of printed notes are handed down from class to class, and are safe material for examination purposes; while a student, if so minded, may read and digest the contents of any lecture the day before its delivery, and may even pass the examination with high credit without once seeing the professor.

It is clear, I think, that in demanding printed notes the student is seeking some accurate form of the subject-matter presented in a lecture course; he wants something to take home with him and "grind" at his leisure. His own notes serve him to a certain extent. They comprise a more or less orderly system of information covering a certain field of knowledge; in other words, a text-book—a text-book poor enough, but of peculiar value to the student inasmuch as the familiarity of his own writing and mode of expression simplifies the task of learning. His own notes, however, are often far from accurate, far from complete; and on the approach of the examination he may feel an honest distrust of the harvest within his note covers. The most promising substitute is a series of

printed notes. He buys or borrows a set, and, trusting in the ability of the compiler, applies himself to the comparatively easy undertaking of absorbing the course in its new form.

The tendency of the lecture to stimulate the production of unauthorized or even illegitimate text-books in the form of printed notes is, I believe, the result of an attempt on the part of the lecturer to furnish subject-matter in the place of instruction. To render subject-matter available is not instruction. No one can maintain that the student who has heard a purely informative lecture goes from it instructed in the data therein set forth. The data have been merely placed at his disposal; the first step only has been taken toward learning: the material is in his notes, not in his head, and the lecture itself takes little part in the process of acquisition. But the lecture is seldom purely a matter of data; there must usually be a residuum, be it of good or evil, of what the lecturer himself imparts to his subject. And this is what the student carries away; this is the instruction. The lecturer should not be burdened with the infinite and wearing detail involved in the complete presentation of a subject. The time has passed when the professor was sole mediator between the student and the archives of learning, and books have long ceased to be inaccessible treasures. What, then, may hinder a lecturer from shifting the burden of subject-detail from his own shoulders to an impersonal receptacle—the text-book? There is, it is true, a text-book danger; but a greater danger lies in the tendency of the lecturer to merge himself in the impersonality of his lecture material, and to degenerate into an automatic text-book. To avoid this, let the instructor see to it that the mass of his subject be made available to the student, not by dictation and thence by means of faulty or inadequate transcriptions, but in the form of reliable, well-written books. The lack of such books must not provide an excuse for the annual repetition of the same lectures. In such a case the instructor's duty lies in one path: he must furnish his own text-book as an earnest that he conscientiously believes the light vouchsafed him is clearer than that granted to any other. If means are wanting, then let him place at the disposal of his students an amplified and carefully

revised edition of his own lecture notes, which shall be neither a snare to the student nor a discredit to himself. The lectures may now be used, to mold as it were, the dead subject-matter into a living shape; to give it not only unity, but personality. The student will first possess the subject-matter in a form profitable for study—then will receive from the lecturer the scholarly incentive.

Another supplemental resource of the student is the "compend"—a form of literature often found on the shelves of dealers in text-books, and especially medical text-books. It consists of an epitome, frequently in catechetic form, setting forth the "essentials" of a subject. Some of these books are by trustworthy compilers, and are published by reputable firms; they are concise and useful outlines of systematic subjects. Instructors, however, sometimes frown upon the compend, regarding it as a temptation to the student to neglect more profitable sources. I think that an inquiry into the motives that underlie the use of such aids would show in most cases that in the persistent use of the compend the student is seeking to supply the lack of synthesis and correlation in the instruction afforded him.

The office which the compend thus assumes is in reality an important function of the lecture—one which too often is completely obscured by unnecessary presentation of subject-matter. Engaged in constant acquisition of details, the student is in danger of losing sight of the form, significance, and relations of a subject in the analysis necessary for this acquisition. It is therefore the duty of the lecturer, while urging accuracy in detail, to draw the student's eye, for the time being, away from detail and to direct it upon mass. He may accomplish this: first, by reviewing the subject in outline, placing a printed syllabus in the hands of every student; secondly, by emphasizing relations—the interrelation of parts and the relations of the subject to allied subjects; thirdly, by "explaining type as illustration of the general principle," showing thereby how the individual may represent and simplify the aggregate, in the sense that a man may epitomize his epoch or an animal its group; and, finally, by giving a concise but comprehensive

summary at the end of the course, which may furnish an enduring cement for details not firmly incorporated. Let the instructor make good use of this synoptic function of the lecture, causing his students day by day to see and to understand as a whole the structure which they are building, and he may have the satisfaction of finding their examination papers orderly and coherent presentations of knowledge, instead of unassorted scraps from intellectual junk-shops.

The usefulness of the lecture might be extended in offering to students the preliminary advice which they so much need on entering upon long courses of study. A student seldom completes a technical or professional course without regret that he did not realize early in his training the importance of fundamental subjects neglected or approached half-heartedly at a time when their bearing upon subsequent work was not fully understood. Students could be saved such misfortune if their teachers, at the beginning of extended courses which lead up to life work, would set forth explicitly the relation of fundamental to professional subjects. Lectures with this purpose, delivered in short courses by men whose advice would have instant weight, would impart to the student a right perspective of the work of coming years, and establish for him a logical basis of action. The lecture may be made, in other words, a means of dispelling that insidious illusion that practice may develop and flourish apart from its source of nourishment, theory.

The lecture should also be left untrammeled for the introduction of new matter not yet incorporated in books; and especially for reference to sources, and for encouragement in thus seeking knowledge at first hand. Its province is not so much to impart knowledge as to inculcate methods by which knowledge may be gained—methods of observation and interpretation, and methods in the use of literature. Students care much less for the completely informed teacher than for him who says frankly, "I do not know," but who can suggest at once a good way of finding out.

Deprived of these directive uses peculiarly its own, the lecture fails to develop its greatest power—the exercise of

personality. Didactic lecturing, with its constant tendency to become formal and impersonal, may cause students, in their desire for more direct influence, to take refuge in private instruction. Recourse to a tutor is generally supposed to be confined to students who are naturally or incidentally backward. This is not, however, always the case. The average student enters college from a school where the relation of teacher to pupil has been personal. The new atmosphere is widely different; the larger system appears to the freshman a maze of novelty. Into this maze he plunges, and soon finds himself resolving an apparent chaos to routine order, while various threads of contact with instructors lend confidence and lead him hopefully onward. But some courses (notably the non-contact lecture courses) offer blank walls. A subject that should from its nature be attractive and full of incentive proves merely a great machine. Some students, feeling the lack of encouragement and directive influence, seek out a tutor; and, with self-confidence renewed from a little sympathetic guidance, they overtake courses that were fast outstripping them, regain interest, take the examinations and pass them well. The tutor merely provides that which was wanting in the lecture instruction—personality—and the student demands no more.

Whether students seek help from a tutor individually, or in small classes (as in the justly denounced "reviews" of cramming establishments, and in the approved and useful "quiz-classes" of medical schools), the motive, whatever it may seem, cannot be divorced from the natural craving of every student for personality in teaching. The student should not be left to seek this outside. He needs and justly demands in his university life, not only opportunity, but influence; and his instructor, in furnishing the one, should not forget the obligation of exerting the other. Obviously, personal relations, man to man, can attain their fullest development in laboratory, recitation, and conference; but, once rid of the crippling load of subject detail, the lecture has a true function to subserve in bringing the professor into influential relation with his students. Free from the necessity of covering a subject, the lecturer may direct, advise, stimulate, and inspire.

In addressing responsive hearers he will prevent the text-book from becoming a thing apart—cold and repellent. Students will leave his presence instructed. They will carry away as a permanent acquisition what has been said *about* the subject, instead of the subject itself, piecemeal in their notes. The lecture will thus accomplish what it has so far almost vainly striven after—" the substitution of personality for print."

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VI

THE TAGALOG LANGUAGE

Tagalog is the principal dialect of the Christian and civilized Filipinos, who constitute about eighty per cent. of the inhabitants of the Philippine archipelago. Buckle [1] quotes an opinion of W. von Humboldt that it is the most perfect form of all the Malayo-Polynesian tongues. According to Deniker,[2] "it is largely superseding the other dialects, having already displaced Bicol in the north of the province of Camarine, Bisayan on Marinduque Island, etc." Perhaps it would be better to say that dialectic variety is disappearing under the influence of closer intercourse and a common national spirit, for Bisayan, Ilocoan, Tagalog, etc., are in fact a group of related dialects springing from a single Malayan stock. Middleton,[3] a Catholic priest who recently delivered a lecture on this subject before the Philobiblon Club of Philadelphia, says: "The various dialects are twenty-seven in number, all, however, akin in their common stock, Malay, of which these idioms or patois are daughters, yet with countless sharply marked differences between one another."

Philologists classify Tagalog in the Malayo-Polynesian family. Its radical elements are dissyllabic, and reduplication is a marked feature in its grammatical structure. It belongs to the agglutinating class of languages, being exceedingly rich in determinative particles which modify meaning when added to roots. In its present form it shows the influence of Spanish and Chinese contact. Its very alphabet is Latin instead of the original Arabic. Except native scholars and a few foreigners like Blumentritt and certain Spanish monks, there are none competent to discuss a language which, for weal or woe, has become a part of American thought and life.

The following statements are based on a study of a *Metodo*

[1] *Civilization in England*, vol. i, p. 221.
[2] *Races of man*, p. 491.
[3] *Notes on bibliography of the Philippines*, p. 16.

teorico-practico para aprender el Lenguaje Tagalo, published some twelve years ago and by some attributed, incorrectly, however, to the gifted and lamented Dr. José Rizal.

1 *Phonology*—Tagalog has the three primitive vowel-sounds, *a, i, u,* which are characteristic of the European branch of the Aryan family. The other vowel sounds, *e,* and *o,* are used in printing, and chiefly in words of Spanish origin; but they are pronounced like *i,* and *u,* respectively. They were either introduced directly by the Spaniards or else developed by the same process and in response to the same needs as in Europeans tongues. There are no diphthongs nor other combinations of vowels.

There are fifteen simple and two compound consonant-sounds, viz., *b, c, d, g, h, l, m, n, p, q, r, s, t, v, y, ch,* and *ng.* Of the compound consonants, *ch* occurs only in Chinese words, but *ng* is a characteristic Tagalog sound. Dr. Rizal proposed some modifications, for example, that *k* should be used instead of *c* and *q,* and they have been largely adopted. In *Everybody's magazine,* August, 1901, a facsimile of a pass issued by Aguinaldo is printed, and it contains four words in which *k* replaces *c.* This usage will probably grow under American influence. However, *c* keeps its hard sound, being used only before *a, o,* and *u.*

The theory of euphony as a constructive force in the development of language has been largely discarded by philologists. The insertions which we call euphonic are supposed to have had an intrinsic value at some stage of the development; so that they belong rather to morphology than to phonology. Be that as it may, the Tagals very often insert consonants (*t, h,* and particularly their beloved *ng*) between vowels which come together in the formation of words.

In speaking, the natives use a semi-falsetto nasal intonation, "as if," says Rizal, "they were gently scolding one another."

2 *Morphology*—The most noticeable structural feature of the language is its wealth of radicals, which, by the addition of prefixes or suffixes or both, become capable of wide application. A radical becomes an adjective if *ma* is prefixed and an abstract noun if *ca* is prefixed and *an* suffixed. For example.

the radical *buti,* good;
mabuti lalaqi, good man;
cabutihan, goodness.

The well-known name of the Philippine Revolutionary Society, *catipunan,* is an abstract noun of this formation, and means society or union.

The suffix *an,* added to the name of a thing, signifies the container of that thing, thus,

bating, bell;
batingan, belfry.

The prefix *mag,* with the duplication of the first syllable of the name of a thing, denotes the person who deals in or does that thing, thus,

alac, wine,
magaalac, wine-dealer.

The article is inflexible, as in English. The, *ang.*

Number and gender are not grammatical. The word *mañga* is used to denote plurality, thus,

tauo, man;
ang mañga tauo, the men.

Gender is based on sex, and hence is not expressed grammatically, except that, when a word is common to both sexes, distinction is made by adding the word *lalaqi* (man or male) or the word *babay* (female or woman).

The pronouns are never suppressed. They are numerous, and explicit, and even avoid the ambiguity of English pronouns. For example, we (meaning the speaker and the person addressed), is *tayo:* but if the hearer is excluded, it is *cami.* Like the old English and modern Germans, the Tagals use the second person plural in addressing others of equal social standing, and the second person singular for inferiors or for intimate friends or relations.

The numerals are complete, the units being expressed each

by a single word, the teens by the word *labin* before the corresponding unit, and the multiples by adding the word *poo*, after the unit. Ordinals are formed from the cardinals by prefixing *ica*. Thus,

ualo, eight;
labin ualo, eighteen;
ualong poo, eighty;
ica ualo, eighth.

Adjectives are generally formed by prefixing *ma* to the root, tho there are of course many primitive adjectives. Comparison is expressed by duplication either of the first syllable or of the entire radical. Thus,

mabuti, good;
mababuti, best.

The verbs are active, passive, reflexive, and impersonal. Their various moods and tenses are expressed partly by prefixes to the root and partly by duplicating one or more syllables of the root. Thus,

The root *aral* means study;
mag-aral, to study;
nag-a-aral aco, I study;
mag-a-aral aco, I shall study.

The particle *pag* prefixed to the root changes the verb into a substantive, thus,

ang pag-aral, the studying.

From all this it will be seen that the Tagalog language has reached a considerable development. But whether the development of a language is an index of the mental capacity of a people is not clear. Chinese is a poorly developed language, but the Chinese have a literature and a culture. On the other hand, highly developed languages have been found among the American aborigines who were devoid of both literature and culture. Whitney[4] says, "On the whole the value and rank

[4] *Lectures on the science of language.*

of a language are determined by what its users have made it do."

That the Filipinos have only scant literature and that their culture (which is real) is not indigenous, must be admitted; but that they have great capabilities must also be conceded. That they are as a race superior to the Chinese should not be gainsaid by anyone who is not prepared to deny that three centuries of close contact with European civilization can have beneficial results. Their fondness for ballads, music, and drama (I speak of the uncultured natives) indicates the existence of soul which must find expression under favorable circumstances. The poverty of their genius is, to my mind, sufficiently accounted for by the fact that they have always been a subject race. "Freedom is the first lesson in self-government," said a mural tablet at the Pan-American exposition. It is also the mold of character and the nurse of genius.

Whether the attempt which is now being made "to submerge the archipelago under a wave of English education" be successful or not, the Tagalog language will probably persist. I have been told by an officer of the first American troops sent to the Phillipines, who had many opportunities of meeting Aguinaldo, that the Filipino general resented being addressed in Spanish, and said that his people had their own language, which should be recognized. This spirit will keep alive Tagalog as it has kept it alive under three hundred years of Spanish dominion.

The Manila *Renacimiento* of June 26, 1902, states that a number of enthusiastic young Filipinos have organized a *Sociedad de Escritores Tagalos,* and gives a list of Tagalog works published by them. The Serranos, father and son (the latter being still alive and up to the American occupation being principal of the normal school in Manila), have published a good Tagalog-Spanish Dictionary. It may be also mentioned that there are several newspapers published at the present time either wholly or partly in Tagalog.

Tho the printing press was set up in the Philippines as early as 1603, its products up to recent years in the Tagalog language have been chiefly church- and schoolbooks written by

the monks. The following list of Tagalog works drawn from Middleton and from Retana's Bibliography of 3000 titles may interest students:

1. A Study of Tagal language and poetry, published in 1703 by an Augustinian monk, Gasper. (Reprinted, Sampaloc, 1787, and Manila, 1879.)

2. A collection of Tagal Songs, by two Franciscans, Martin and Cuadrado. (Guadaloupe, 1890.)

3. A critical Treatise on Tagalisms, compared with Latin, Greek, Hebrew, and Chinese, by a Franciscan monk, Oyenguaran. (Mexico, 1742.)

4. A Tagal Dictionary; by a Jesuit, de Noceda. (Manila, 1754. Reprinted at Valladolid, 1836, and Manila, 1860.)

5. An Essay on Tagalog Grammar; by a Recollect monk, Minguella. (Manila, 1887.)

6. A Tagal Arte (Aid to Learn); by a Franciscan, Totanes. (Sampaloc, 1745.)

The Ayer collection in the Newberry Library in this city contains (besides copies of 1, 5 and 6):

7. The Serrano Dictionary mentioned above.

8. Arte y Reglas de la lengua Tagala; by the Monk Francisco de San José. (Manila, 1832.)

9. A Method for Teaching Spanish to Tagalog Children, by Minguella. (Manila, 1866.)

10. Metodo para aprender el lenguaje Tagalog; by Julius Miles. (Barcelona, 1888.)

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VII

PROFESSIONAL SCHOOLS AND THE AMERICAN COLLEGE[1]

STANDARD OF ADMISSION TO THE PROFESSIONAL AND TECHNICAL SCHOOLS

I have pointed out that it is held to be settled policy at Columbia University that the several technical and professional schools shall rest upon a college course of liberal study as a foundation (altho not necessarily upon a course four years in length), either at once or as soon as practicable. The School of Law has already been placed upon the basis of a graduate school, to take effect July 1, 1903. On December 20, 1898, the University Council recommended that the College of Physicians and Surgeons be made a graduate school as soon as such a step is financially practicable. The Schools of Applied Science have constantly in mind a similar step, and much consideration has been given by the Faculty to the best way of bringing about the change without undue sacrifice. This policy, however, does not pass unchallenged. It has recently been criticised and opposed in a cogent and noteworthy argument by President Hadley of Yale University in his annual report for the year 1901-02, on the grounds (1) that it tends to make the professions exclusive in a bad sense, (2) that it leads to a remodeling of the college course to meet the needs of intending professional students, which remodeling is at least a doubtful experiment, and (3) that it establishes an unfortunate distinction between the universities which require a bachelor's degree as a condition of admission to the professional schools and those which make no such requirement. This policy is also criticised and opposed by many intelligent persons, trusted leaders of public opinion, not university teachers or administrators, who are impressed by the fact that the whole tendency of

[1] Reprinted, by request, from the Annual Report of the President of Columbia University, submitted October 6, 1902.

our modern educational system is to prolong unduly the period of preparation or studentship, with the result that an increasing number of young men are held back from active and independent participation in the practical work of life until they are nearly, or quite, thirty years of age. In the face of such objections as these it is obvious that we at Columbia must consider carefully the probable social and educational effects of the policy upon which we have entered.

The questions raised in the discussion of this policy are to be decided, it seems to me, from the standpoint of the duty of the University to the public and to its own educational ideals. Two interests are immediately at stake: the standards of professional study in a university, and the place of the American college in the higher education of the twentieth century. I doubt whether the two interests can be separated in any adequate consideration of the subject.

President Eliot of Harvard University impressively set forth the responsibilities and the opportunities of the learned professions in his address at the Installation ceremonies on April 19 last, when he said:

> It is plain that the future prosperity and progress of modern communities are hereafter going to depend much more than ever before on the large groups of higher trained men which constitute what are called the professions. The social and industrial powers, and the moral influences which strengthen and uplift modern society are no longer in the hands of legislatures, or political parties, or public men. All these political agencies are becoming secondary and subordinate influences. They neither originate nor lead; they sometimes regulate and set bounds, and often impede. The real incentives and motive powers which impel society forward and upward spring from those bodies of well-trained, alert, and progressive men known as the professions. They give effect to the discoveries or imaginings of genius. All the large businesses and new enterprises depend for their success on the advice and co-operation of the professions.

With such an ideal as this held up before the student of law, of medicine, of divinity, of teaching, of architecture, or of applied science, what standard of excellence shall the university require of him when he enters upon his professional studies? Three answers seem to be possible: The university may require (1) the completion of a normal secondary school course of four years, and so put admission to the professional and

technical schools on a plane with admission to college, or (2) the completion of the present college course of four years, or (3) the completion of a shortened college course.

When weighing the advantages and disadvantages of these several lines of action, it should be borne in mind that a uniform policy on the part of all universities in dealing with this question is not necessary and may not be desirable. We are directly concerned with the question so far as it concerns the duty and the interest of Columbia; but the universities having different social and educational needs to meet, and somewhat different ideals to labor for, may be wise in reaching a conclusion quite different from that which most commends itself to us. This consideration seems to me to meet the third of President Hadley's objections already referred to. Furthermore, the universities do not control admission to the practice of the professions, and it is not in their power, as it is certainly not their wish, to shut out from his chosen profession any competent person whatever his training or wherever it has been had. If the standards of professional study required by the universities are higher than the minimum fixed by law, no one will attend a university for professional study unless its standards appeal to him and unless he hopes to find ultimate gain by conforming to them at some expense of both time and money. On the other hand, if the universities make the minimum standards fixed by law their own,—and only by so doing can they avoid discriminating against someone,—then they seem to me to have abdicated their functions as leaders in American intellectual life. The result would quickly be seen, I am sure, in the falling off of popular favor and support. These facts appear to meet the first of President Hadley's objections. His second objection involves a discussion of the significance of the college course, a subject which I shall consider in its proper place.

Columbia University cannot be satisfied with a requirement of only secondary school graduation for admission to the professional and technical schools for several reasons.

1. Such students at 17 or 18 years of age (or, as should be the case, at 16 or 16 1-2 years) are too immature to carry on a severe course of professional study with profit.

2. When such students predominate, or form a large proportion of the total number attending any given professional school, the teaching deteriorates and the instruction tends to become either superficial or unduly long drawn out and wasteful of time.

3. Other institutions in various parts of the country afford the fullest opportunity for students who are compelled to remain satisfied with the shortest possible preparation for the practice of a profession, and Columbia would not be justified in using its funds merely to add to a provision which is already ample. Columbia offers the most generous assistance to students who are able and willing to meet its standards and who need help in order to carry on their studies, but is not willing to lower those standards at the cost of social and educational effectiveness.

4. Secondary school graduates, however well taught, are necessarily without the more advanced discipline in the study of the liberal arts and sciences and without that wider outlook on the world of nature and of man which it is the aim of the college to give. It is our hope and wish that those who hold professional or technical degrees from Columbia University will be not only soundly trained in their chosen professions, but liberally educated men as well. No stress is laid upon the college degree as a mere title, but it is held to stand, in the vast majority of cases, for greater maturity of mind and broader scholarship.

5. For Columbia University to admit students to the professional and technical schools upon the same terms as those by which admission to the College is gained, would be to throw the weight of our influence against college education in general and against Columbia College in particular. After a few years, no student who looked forward to a professional career would seek admission to Columbia College, or to any other, except those who had ample time and money to spare.

On the other hand, while I hold a secondary school education to be too low a standard for admission to professional study at Columbia University, personally I am of opinion that to insist upon graduation from the usual four-years' college course is too high a standard (measured in terms of time) to insist upon, and

an unsatisfactory one as well. My view of the matter is concurred in by the Dean of Columbia College, by the Dean of the Faculty of Law, and by the Dean of Teachers College, as will be seen by reference to their annual reports, which accompany this document and are a part of it.

My objections to making graduation from a four-years' college course a prerequisite for professional study at Columbia University are mainly two:

1. I share the view, already alluded to, that the whole tendency of our present educational system is to postpone unduly the period of self-support, and I feel certain that public opinion will not long sustain a scheme of formal training which in its completeness includes a kindergarten course of two or three years, an elementary school course of eight years, a secondary school course of four years, a college course of four years, and a professional or technical school course of three or four years, followed by a period of apprenticeship on small wages or on no wages at all.

2. Four years is, in my opinion, too long a time to devote to the college course as now constituted, especially for students who are to remain in university residence as technical or professional students. President Patton of Princeton University voiced the sentiments of many of the most experienced observers of educational tendencies when he said that: "In some way that delightful period of comradeship, amusement, desultory reading, and choice of incongruous courses of what we are pleased to call study, which is characteristic of so many undergraduates, must be shortened in order that more time may be given to the strenuous life of professional equipment." For quite twenty years President Eliot has advocated this view and in arguments which have seemed to me unanswerable, under the conditions existing at Harvard, has urged that the degree of bachelor of arts be given by Harvard College after three years of residence.[2] At Columbia, and elsewhere, the practice of

[2] After this report was in type it was announced that hereafter the degree of A. B. will be conferred by Harvard College upon students who complete the requirements for the degree in three years at once and without an additional year's delay, as heretofore. Somewhat similar announcements have also been made by the University of Pennsylvania and by Brown University.

counting a year of professional study as a substitute for the fourth or Senior year of the college course has in effect established a three-years' college course for intending professional and technical students. The degree has been withheld until a year of professional study has been completed, in deference to tradition rather than from sound educational principle. In this way new conditions have been met without the appearance of shortening the college course. While the policy hitherto pursued in this regard was justified as a beginning toward a readjustment of the relations between the college and the professional and technical schools, it is hardly to be upheld as a final solution of the problems presented. From my point of view it is open to criticism in that it (1) shortens the college course without appearing to do so, (2) divides the interest of the student in a way that is satisfactory neither to the college nor to the faculties of the professional schools, and (3) fails to give the full support to a college course of purely liberal study which is so much to be desired.

There remains a third line of action, namely, that of basing admission to the professional and technical schools of the University upon a shortened course in Columbia College or its equivalent elsewhere. This I believe to be the wisest plan for Columbia University to adopt, as well as the one whose general adoption would result in the greatest public advantage.

LENGTH OF THE COLLEGE COURSE

One consideration of vital importance appears to have been overlooked in the numerous discussions of this whole matter, and that is the fact that there is no valid reason why the college course should be of one uniform length for all classes of students. The unnecessary assumption of the contrary view has greatly complicated the entire question, both in the public and in the academic mind. It must be remembered that for the intending student of law, medicine, or applied science who goes to college, three or four additional years of university residence and study are in prospect after the bachelor's degree has been obtained. For the college student who looks forward to a business career, on the other hand, academic residence closes with grad-

uation from college. For the latter class, therefore, the college course may well be longer than for the former. While two, or three, years of purely college life and study may be ample for the man who proposes to remain in the university as a professional or as a technical student, three, or even four, years may be desirable for him who at college graduation leaves the university, its atmosphere, its opportunities, and its influence, forever.

It must be remembered, too, that the four-years' college course is merely a matter of convention, and that there are many exceptions to the rule. The Harvard College course was at one time but three years in length, and the collegiate course at the Johns Hopkins University has been three years in length from its establishment. The normal period of residence for an undergraduate at both the English and the Scottish universities is three years. President Wayland of Brown University, who was in so many ways a true prophet of educational advance, devised a plan for a normal three-years' college course over half a century ago. The question is not so much one of the time spent upon a college course as it is one of the quality of the work done and the soundness of the mental and moral training given. The peculiar service which the college exists to perform may be done in one case in two years, in another in three, in another in four, and in still another not at all.

Since 1860 the changes in American educational conditions have been revolutionary, and as one result the content of the A. B degree has been wholly altered and that degree has been elevated, at Columbia College at least, to a point almost exactly two years in advance of that at which it then was. In other words, despite the fact that college admission requirements have been raised and much of the instruction once given in college is now given in the secondary schools, particularly the public high schools, the bachelor's degree has been held steadily at a point four years distant from college entrance, with the result that the average age of college students at graduation has greatly increased. Since 1880 the average age of the students entering Columbia College has increased exactly one year; and while no adequate statistics for 1860 are available, it appears

to be true that the average age of admission in 1880 was one full year higher than in 1860. The Registrar has made a careful examination of the official records, and reports that in Columbia College we are demanding two years more of time and work for the degree of bachelor of arts than was required in 1860, and one year more of time and work than was required in 1880. President Hyde of Bowdoin College has recently said that "Nearly all the distinguished alumni of Bowdoin College graduated at about the present average age of entrance, and were well launched on their professional careers at about the age at which our students now graduate." He cited the cases of Jacob Abbott and William Pitt Fessenden, who were graduated before they were seventeen; Longfellow, who was graduated at eighteen; Franklin Pierce, John A. Andrew, Fordyce Baker, and Egbert Smyth at nineteen; and William P. Frye and Melville W. Fuller at twenty. Instances might readily be multiplied from the records of the American colleges. The recent statistics compiled by Dean Wright of the Academical Department of Yale University, which show the average age of graduation of the members of the class of 1863 at Yale to have been 22 years, 10 months, and 17 days and that of the members of the class of 1902 to have been 22 years, 10 months, and 20 days, point to what appears to be a striking exception, not yet explained, to the general rule.

So long as there were no graduate schools, and therefore no genuine universities, in the United States, and when the bachelor's degree was the highest academic distinction to be gained in residence, it was sound academic and public policy to make the requirements for the degree of bachelor of arts as high as possible. It was the only mark of scholarship that the colleges could give. As a result, the average age at graduation increased. Now, however, conditions have entirely changed. Nearly, or quite one-half of the work formerly done in college for the degree of bachelor of arts is now done in the rapidly increasing number of secondary schools, particularly public high schools, and no small part of it is required for admission to college. This does not appear if the comparison be restricted to admission requirements in Greek, Latin, and

mathematics; but it is clearly evident when the present admission requirements in English, history, the modern European languages, and the natural sciences are taken into account. The standard of scholarship in this country is no longer set by the undergraduate courses in the colleges or by the time devoted to them, but by the post-graduate instruction in the universities and by the requirements demanded for the degree of doctor of philosophy.

These being the undisputed facts, it would appear to be wise, and possible, to treat the length of the college course and the requirements, both in time and in accomplishment, for the degree of bachelor of arts from the standpoint of present-day needs and the largest social service.

In my opinion it is already too late to meet the situation by shortening the college course for all students to three years, altho such action would be a decided step forward so far as the interests of intending professional and technical students are concerned. When President Eliot first proposed a three-years' course for Harvard College, the suggestion was, I think, a wise one. But in the interval conditions have changed again. If we at Columbia should be willing to go no farther than to reduce the length of the college course from four years to three, we should (1) find it impracticable both on financial and on educational grounds to require that course as prerequisite for admission to the Schools of Applied Science, and, possibly, to the School of Medicine, and (2) we should be unable to resist the pressure for further reconstruction and rearrangement that would be upon us before our work was completed and in operation. My own belief is that Columbia University will perform the greatest public service if it establishes two courses in Columbia College, one of two years and one of four years,—the former to be included in the latter,—and if it requires the satisfactory completion of the shorter course, or its equivalent elsewhere, for admission to the professional and technical schools of the University. By taking this step we should retain the College with its two years of liberal studies as an integral element in our system, shorten by two years the combined periods of secondary school, college, and professional school instruc-

tion, and yet enforce a standard of admission to our professional schools which, both in quantity and in quality, is on a plane as high as the Columbia degree of bachelor of arts of 1860, which was recognized as conforming to a very useful standard of excellence. At the same time we should retain the four-years' course with all its manifest advantages and opportunities for those who look forward to a scholarly career, and for as many of those who intend to enter upon some active business after graduation as can be induced to follow it.

Under such a plan we should have in Columbia College four different classes of students: (1) those who were taking the shorter course of two years in preparation for a technical and professional course, and who would therefore look forward to a total university residence of five or six years; (2) those who were taking the shorter course of two years, but without any thought of subsequent professional or technical study; (3) those who felt able to give the time necessary to take the longer course without any intention of technical or professional study. The second class of students would be a new and highly desirable class, and would be, for the most part, made up of earnest young men seeking a wider and more thoro scholarly training than the secondary school can offer, but unable to devote four years to that end. The third class of students would be able, by a proper selection of studies in the later years of their college course, either to enter a professional school with advanced standing or to anticipate some of the preliminary professional studies and to devote the time so gained to more intensive professional work. Undoubtedly many students who now take a four-years' undergraduate course with no professional or technical end in view would take the shorter course, and that only, but on the other hand numbers of students would come to college for a course of two years who, when obliged to choose between a four-years' course and none at all, are compelled to give up college altogether. The final result of the changes would certainly be to increase the total number of students taking a college course of one length or another.

The Dean of Columbia College is of the opinion that such a shortened course of two years as is contemplated by this sug-

gestion could readily be made to include all of the studies now prescribed at Columbia for candidates for the degree of bachelor of arts. This shortened course would, therefore, take on something of the definiteness and purpose which in many cases the rapid developments of recent years have removed from undergraduate study; for it goes without saying that no effort would be spared to make such a two-years' course as valuable as possible, both for intellectual training and for the development of character. The student would be a gainer, not a loser, by the change.

THE DEGREES OF BACHELOR OF ARTS AND OF MASTER OF ARTS

If Columbia College should offer two courses in the liberal arts and sciences, one of two years and one of four years in length, the second including the first, the question would at once arise as to what degrees or other marks of academic recognition would be conferred upon students who had satisfactorily completed them.

Two answers appear to be possible. First, we may withhold the bachelor's degree until the completion of the longer course, and grant some new designation to those who satisfactorily complete the shorter course. This has been done at the University of Chicago, where graduates of the junior college course of two years are made Associates in Arts. Or we may degrade—as it is called—the bachelor's degree from the artificial position in which the development of the last forty years have placed it, and confer it upon the graduates of the shorter course of two years, and give the degree of master of arts for the longer course of four years. The latter alternative would be my own preference. Such a plan would bring the degree of bachelor of arts two years earlier than now and would place it substantially on a par with the bachelor's degree in France, the *Zeugniss der Reife* in Germany and the ordinary degree in course as conferred by the English and the Scottish universities. It would also be substantially on a par with the Columbia College degree of 1860.

In this connection it must be remembered that it is not the

A. B. degree of to-day which is so much extolled and so highly esteemed as the mark of a liberal education gained by hard study and severe discipline, but that of one and two generations ago. The A. B. degree of to-day is a very uncertain quantity, and time alone will show whether it means much or little.

The degree of master of arts is an entirely appropriate reward for the completion of a college course, under the new conditions proposed, four years in length. This degree has been put to many varied uses and has no generally accepted significance. In Scotland it is given in place of the degree of bachelor of arts at the close of three very short years of undergraduate study. In England it signifies that the holder is a bachelor of arts, that he has lived for a certain minimum of terms after obtaining the bachelor's degree, and that he has paid certain fees. In Germany it is usually included in the degree of doctor of philosophy. In the United States the degree is more often than not a purely honorary designation; altho in recent years the stronger universities have guarded it strictly and now grant it for a minimum period of graduate study for one year in residence. At the meeting of the Association of American Universities in February last there was a very interesting discussion on the subject of this degree, and the divergence of policy in regard to it was made plainly evident. As an intermediate degree between those of bachelor of arts and doctor of philosophy, that of master of arts has been and is very useful at Columbia. It marks the close of a period of serious resident graduate study, and is an appropriate reward for the work of those university students who have neither the inclination nor the peculiar abilities and temperament to fit themselves for successful examination for the degree of doctor of philosophy. At the same time it must be admitted that the rapid development of the elective system and the widely different standards of the scores of colleges from which our graduate students come, have almost wiped out the distinction between the Senior year in Columbia College and the first year of graduate study. To the best of my knowledge and belief, the fixing of the degree of master of arts at the close of a four-years' undergraduate course would involve no real alteration in the standard

required on the part of those coming to Columbia from other institutions. For students of Columbia College it would bring the degree within reach after four years of residence instead of five.

In the case of candidates for the degree of doctor of philosophy, the completion of the longer college course, or its equivalent elsewhere, would of course be required, and also the same minimum period of post-graduate resident study as now. There would be no alteration in the time necessary or the standard now set for that degree, which, as conferred at Columbia, is recognized as conforming to the highest and best standards.

With the courses in applied science and in medicine fixed at four years, to base them upon a two-years' college course would be to elevate them to a proper university standard and to insure the best possible class of students. The Law School and the professional courses in Teachers College could easily be put upon the same basis.

Reflection and a careful study of the facts will make it apparent that these suggestions are less radical than seems to be the case on first sight. They at least offer a solution to a generally recognized problem, one which has often been pointed to, but toward the solution of which little progress has been made. I shall seek an early opportunity of bringing them before the University Council and the several Faculties for full consideration and discussion.

THE FUTURE OF THE AMERICAN COLLEGE

Should Columbia University adopt such a policy as has been outlined, and should the same or a similar policy commend itself to the governing bodies of any other American universities whose problems are similar to ours, a development already in progress thruout the country would be hastened. As the public high schools multiply and strengthen they will tend more and more to give the instruction now offered in the first year, or first two years, of the college course. In so far they will become local colleges, but without the characteristic or the attractiveness of student residence. Furthermore, the time would sooner come when colleges, excellent in ideals and rich in teach-

ing power but without the resources necessary to carry on a four-years' course of instruction satisfactorily, will raise the requirements for admission to a proper point and then concentrate all their strength upon a thoroly sound course of two years leading to the bachelor's degree. More depends upon the strict enforcement of proper standards of admission to college than is generally believed; that is at present the weakest point in college administration. The general standard of college education in the United States would be strengthened more if the weaker colleges would fix and rigidly enforce proper entrance requirements and concentrate all their money and energies upon two years of thoro college work than if they continue to spread a college course over four years with admission secured on nominal terms or on none at all.

The policy outlined would, I think, largely increase the number of students seeking a college education, and many who might enter one of the stronger colleges for the two-years' course would remain for four years. The loss of income due to the dropping out of students after two years of residence would be more than made good very soon by the large increase in college attendance.

As the system of higher education in the United States has developed it has become apparent that we have substituted three institutions—secondary school, college, and university—for the two—secondary school and university—which exist in France and Germany. The work done in the United States by the best colleges is done in France and Germany one-half by the secondary school and one-half by the university. The training given in Europe differs in many ways from that given here, but from an administrative point of view the comparison just made is substantially correct. The college, as we have it, is peculiar to our own national system of education, and is perhaps its strongest, as it certainly is its most characteristic, feature. It breaks the sharp transition which is so noticeable in Europe between the close surveillance and prescribed order of the secondary school and the absolute freedom of the university. Its course of liberal study comes just at the time in the student's life to do him most good, to open and inform his

intelligence, and to refine and strengthen his character. Its student life, social opportunities, and athletic sports are all additional elements of usefulness and of strength. It has endeared itself to three or four generations of the flower of our American youth, and it is more useful to-day than at any earlier time.

For all these reasons I am anxious to have it preserved as part of our educational system, and so adjusted to the social and educational conditions which surround us that a college training may be an essential part of the higher education of an American, whether he is destined to a professional career or to a business occupation. It seems to me clear that if the college is not so adjusted it will, despite its recent rapid growth, lose its prestige and place of honor in our American life, and that it may eventually disappear entirely, to the great damage of our whole educational system.

NICHOLAS MURRAY BUTLER

COLUMBIA UNIVERSITY

VIII

DISCUSSION

TEN YEARS OF HIGH-SCHOOL GROWTH

In Search's *Ideal school*[1] the charge is indirectly made that the public high schools are not doing college preparatory work as well as they did thirty years ago. Since the courses of both college preparatory and other high-school students are in many respects identical, the charge, if proved, is a most serious one, because it proves that the work of the public high schools is deteriorating. Any careful student would question the truth of Search's charge, for several reasons.

His book appeared in 1901, and yet the Harvard College statistics, given as the basis of the charge, come down only to 1894. All teachers know that the high school as it exists today is little more than ten years old, and that no other period of high-school development can compare in importance with the last five years. Again, in a work as scholarly as the *Ideal school* one would expect the investigation pushed to other schools than Harvard College before drawing any conclusion.

A careful study of the Harvard tables (*vide* Report of the President, 1899-1900, p. 7) reveals some very interesting facts.

In the first place, Search's percentages are absolutely worthless, because he fails to reckon with a strong disturbing element in the Harvard statistics. The students entering Harvard College are arranged in the President's report, by years, in the following columns: (a) From public schools, (b) from endowed schools, (c) from private schools, (d) private pupils, (e) from colleges, including other Harvard departments, (f) total, (g) percentage from public schools. The disturbing element is in column (e) from colleges, including other Harvard departments. In the year 1871 there were only 8 in this class, in a total of 203. In 1894 there were 94 in this class

[1] New York: D. Appleton & Co., 1901.

in a total of 470. Before any conclusions can be drawn from the Harvard tables, bearing on the character of public high-school work as compared with that of private schools, column (e) must be taken out of the totals entirely. For various reasons, column (b) from endowed schools must also be taken out. The two columns which shed light on the problem at hand are columns (a) from public schools and (c) from private schools.

We give by years the number of students entering Harvard College from these two sources.

	PUBLIC SCHOOLS	PRIVATE SCHOOLS
1871	70	42
1872	50	30
1873	72	37
1874	54	25
1875	80	32
1876	51	35
1877	86	31
1878	80	36
1879	72	47
1880	69	41
1881	69	25
1882	82	51
1883	65	62
1884	63	73
1885	73	63
1886	96	70
1887	78	78
1888	94	69
1889	98	99
1890	95	82
1891	128	147
1892	135	116
1893	142	133
1894	126	114
1895	165	114
1896	134	112
1897	143	106
1898	134	106
1899	158	124
1900	212	105

These figures reveal no startling tendencies in a downward direction for public high schools. The first ten years show no marked changes in the relative positions of the two columns.

Beginning with 1882, there is a steady increase in the number of students coming from private schools. This reaches its maximum in 1891. Private schools show a steady decline from that date. The public-school figures give the first indication of new life in 1886. From that time on they show a steady increase. In 1891, 128 public high-school students entered Harvard College. In 1900 there were 212, an increase of more than 65 1-2 per cent. In 1891, 147 students entered Harvard College from private schools. In 1900 there were 105, a loss of more than 28 per cent.

A safe conclusion to draw from the Harvard tables, so far as they shed any light on the public high-school problem, is that during the last ten years public high schools have proved themselves excellent fitting schools for one of the best universities in the country.

In his last report President Eliot shows that the number of public schools which from time to time send students to Harvard College is increasing.

In the ten years,				1876–1885,	there	were	82	such	schools.
"	"	"	"	1881–1890,	"	"	96	"	"
"	"	"	"	1891–1900,	"	"	163	"	"

In 1895 there were only 13 public schools outside of New England which sent pupils to Harvard College. In 1900 there were 29 such schools.

During the last four years the percentage from public schools has kept up well and compares favorably with the average percentage of the twenty-six years preceding. Considering that the number of persons who entered the four classes of Harvard College in 1900 is three times as large as it was in 1871, the persistence of the percentage from public schools is highly satisfactory.—President's Report, 1899–1900, p. 7.

Contrast this with the picture drawn by Search:

The result at the present time is that the high schools, as shown by this table, furnish less than twenty-seven per cent. of those admitted to Harvard College. Notwithstanding that the high schools of New England for thirty years have been, more and more, making of themselves fitting schools, their contribution to Harvard College during this time of greatest endeavor has been declining. The average young person who seeks the best training goes where he can find the greatest value. Either the high schools should qualify themselves to compete with private institu-

tions, or they should cease to bend everything to college preparation.—*Ideal school*, p. 36.

In order to learn how accurately this picture portrays the condition of public-school work for the whole country, the writer addressed a circular letter to a large number of college and university presidents, asking for comparative statistics on this point. The following are taken from the replies:

Thirty-six per cent. of the entering class at Wesleyan University in 1893 came from public high schools. In 1901 the percentage of public high-school pupils in the Freshman class at the same institution had risen to 60 per cent.

Forty-six per cent. of the students now at Bucknell University were prepared in public high schools.

Thirty-five per cent. of this year's entering class at Swarthmore College were prepared in public high schools.

Lafayette College reports 34.9 per cent. of the Freshman class in 1876 as coming from public high schools. This rose to 47 per cent. in 1901. At the University of Pennsylvania, the percentage of public high-school pupils in the first class rose from 28 1-5 per cent. in 1895 to 30 5-9 per cent. in 1901.

At Columbia, the percentage of public-school pupils entering the Freshman class rose from 16.6 per cent. in 1897 to 24.8 per cent. in 1901.

Going west we find the public high school much more in evidence. As one president of a State university puts it, "Here we depend entirely on the high schools." No western college reports less than 73 per cent. of its students as coming from public high schools. Ninety per cent. seems to be a fair average. One of the largest State universities reports "practically all" of its students as coming from the public high schools.

The registrar of one of the leading universities in the West has the following to say on the general question under discussion:

The development of high schools in our State up to 1890 was very slow; since then it has been very rapid. This has resulted in the disappearance of many private schools. Moreover, our best students come from the high schools. We are willing to take it for granted that the best private schools have better teaching and give more careful attention to the individual. In some cases the private schools give a better preparation for the Uni-

versity. Yet, except in rare individual cases, the private students nowhere hold their own with high-school students. The high-school students, generally speaking, are better stuff to begin with; they are sturdier, more self-reliant, and respond better to the liberty of the University. As a class they are more seriously ambitious and have higher ideals.

Statistics furnished by Princeton University throw some light on the subject under discussion. In a group of fourteen honor men in the Freshman class in 1884-85, only one came from a public high school. In 1900, in a group of thirty-one honor men, fourteen came from public high schools. The very opposite of Search's contention seems therefore to be true, that is, that the public high schools were never so much in evidence in colleges and universities as they are to-day.

The following statistics, compiled from the last report of the Commissioner of Education (vol. ii, 1899-1900, p. 2122), show the phenomenal development of public high schools in the last ten years. The attendance has increased from 211,596 in 1890 to 519,251 in 1900, an increase of 145 per cent. In the same time the attendance at private academies and seminaries has increased from 89,400 to 110,797, an increase of little more than 12 1-2 per cent. Attendance at public high schools increased steadily during the ten years, while attendance at private schools reached a maximum in 1894, when the number was 118,000.

It is gratifying to learn that this increased attendance has not simply rushed to so-called English or Commercial Courses, as is shown by the following statistics:

PERCENTAGE OF PUPILS STUDYING:		1890	1900
1. Latin	Public	41.20	50.61
	Private	37.00	46.92
2. Algebra	Public	52.20	56.29
	Private	45.00	49.40
3. Geometry	Public	24.60	27.39
	Private	19.60	23.72
4. General history	Public	28.20	38.16
	Private	33.10	36.11
5. Greek	Public	3.00	2.85
	Private	8.00	9.77

The following table gives further evidence that the work in the public high schools is not deteriorating.

PERCENTAGE OF GRADUATES PREPARED FOR COLLEGE

	1890	1900
Public	28.58	30.28
Private	61.37	46.52

Altho the attendance in public high schools has increased 145 per cent. in the last ten years, the percentage of those in attendance who graduate has remained practically the same (12 per cent. in 1890—11.89 per cent. in 1900).

The following table, showing the number of pupils reported as preparing for college, suggests some interesting lines of thought:

	1890	1900
Public	11.84	10.82
Private	21.24	31.87

We must be careful in the use of these figures. If the efficiency of the public high school as compared with the private school varies directly as the percentage of pupils sent to college, then the above table proves conclusively that the work of the public high school has deteriorated in the last ten years. But we have already shown that a larger per cent. of those who do go to college come from the public high schools. One could with much reason lay down the apparently contradictory law of the efficiency of the public high school as follows: The efficiency of the public high school varies directly as the percentage of college students coming from the public high schools, and inversely as the percentage of its own pupils who go to college.

Tuition in the public high schools is free, books and supplies are furnished. Board is provided at home. Only one reason need be given to explain the presence of the young student in the high school, that he wants an education. Most of the young people in attendance at other schools, generally away from home, would give at least two reasons: (1) that they want an education, (2) that they cannot get what they want in the public high school. The decrease of percentage of public high-school pupils going to college indicates that a larger

number of young people have their educational wants supplied at home. The equipment of school laboratories, the growth of libraries [2] in all cities, the addition of college-trained teachers to high-school faculties, all tend to make the high school an excellent place to do advanced high-school work, or in other words, elementary college work.

College presidents tell us that many students should leave college after having been in attendance for two years. Note, for example, the innovation, established by several of the Western universities, of granting the degree of associate for two years of college work. It is too soon to say that the colleges will cut out two years of their work. But the next ten years will see the high schools all over the country encroaching very seriously on the work of the Freshman and Sophomore years of the colleges. This means that a smaller percentage of high-school pupils will go to college, and that ultimately the course from the high school to the university will be shortened.

W. A. Wetzel

High School,
Trenton, N. J.

[2] In 1890 the public high schools reported 1,068,542 volumes in their libraries; in 1900 the number had risen to 2,727,003 volumes. The value of the grounds, buildings, and apparatus, rose from $52,634,684 in 1890 to $96,131,695 in 1900.

IX

REVIEWS.

Staatliche Schulaerzte—Von Professor Dr. G. LEUBUSCHER, Regierungs- und Medizinalrat in Meiningen. (Sammlung von Abhandlungen aus dem Gebiete der pädagogischen Psychologie und Physiologie.) Berlin: Reuther & Reichard, 1902. 58 p. M. 1.60.

It is a significant fact that the school physician in America, when there is one, gives most of his attention to the subject of contagious diseases and the effort to exclude such from the schools. In Germany, on the other hand, the medical officer gives the most of his thought to the careful examination and study of the general physical conditions of the children as they enter school, and at stated intervals thereafter. Chronic and acute diseases, as well as tendencies to abnormality and ill health, are carefully noted, and the school physician, in co-operation with the teacher and parent, strives for the improvement of health and the prevention of all abnormal tendencies as well as for the recognition and cure of positive disease.

In this monograph the author calls attention to the fact that, as the child progresses in school age, he is beset by an increasing number of dangers to health. It is important to distinguish these from the wretched home conditions, poor food, and other unhealthful influences for which the school is not directly responsible. The success of the school physician's work will depend in part at least upon the intelligent interest and active support of the teacher. Strong emphasis is placed upon the importance of including thoro and practical instruction upon matters relating to school hygiene in the normal schools and in all institutions for the training of teachers. The blanks to be filled out by the parents, teachers, and physicians, with the instructions which are sent with them, will be suggestive for those who may wish to undertake similar investigations.

Some account is given of the "school-physician movement" in different parts of Germany, and then follows a description of the organized effort for the medical examination and ob-

servation of the school children in the Duchy of Saxe-Meiningen which was begun in 1900. Forty thousand children were examined the first year, and many interesting figures are given showing the results of examination, with the number and percentages of the children suffering from different abnormal conditions. The numbers affected by some of the diseases noted seem startlingly large, but in many cases much of the ill health is due to unhygienic occupations in which the children are engaged before and after school hours. The investigations of the first year resulted in sending many children to hospitals and physicians for treatment. In some schools gymnastic exercises were arranged, more definitely to correct faulty positions and tendencies to deformity. A considerable number of mentally deficient pupils were recommended for the "Hilfsklassen," where they would receive individual and special instruction and help. Much was done also for the improvement of the schoolhouses and surroundings.

Two recommendations, given particular emphasis by the writer after the first year's experience, relate to cleanliness. The first advocates the establishment of shower-baths in all schools, and the second urges greater cleanliness in the care of schoolrooms, and suggests the use of a floor oil to prevent the rising of dust in the air.

This report does not treat any phase of the subject exhaustively, but contains much useful information about the "school-physician movement" which is to receive more attention in this and other countries in the immediate future.

THOMAS D. WOOD

TEACHERS COLLEGE,
COLUMBIA UNIVERSITY

A Latin grammar for schools—By ANDREW FLEMING WEST, Professor of Latin in Princeton University. (Twentieth Century Text-books.) New York: D. Appleton & Co., 1902. xi+262 p. 90 cents.

It is undoubtedly the privilege of every age to restate its knowledge in terms of its own needs and its own ideals. Even when the facts remain the same, the judgment of their relative value and of their bearing upon life, intellectual or practical, is reasonably certain to change as the result of

widening experience, and it is fortunately possible to say that there are very few departments of thought in which even the facts remain the same from decade to decade. One might think, for instance, that in the field of normal Latin grammar the only novelties possible would be in the way of more precise interpretation of definitive facts. But even a cursory examination of the pages of the *Archiv* would reveal the falsity of this view, and, to mention perhaps the latest notable case, it was left for a monograph of the year 1901 to prove that there was nowhere in existence an accurate statement of the facts in regard to the use of the genitive and accusative with verbs of remembering and forgetting. A Classical Series of Twentieth Century Text-books is therefore a very natural and entirely commendable undertaking, particularly because this series is to deal with the work of the secondary schools, where a really new point of departure was established in 1899 by the Report of the Committee of Twelve appointed by the American Philological Association. The author of the book under review was a member of that Committee, and possibly for this reason among others there devolved upon him the writing of the most difficult volume of the series. For Horace's acute remark, *Difficile est proprie communia dicere,* is, in at least one of its possible senses, very true of such a task as this. The author is well aware of the impossibility of "writing with originality without writing fiction," and gracefully acknowledges his indebtedness, especially to American scholars, to "the penetrating researches of Hale, the pure brightness of Lane's renderings, the lucid order of Gildersleeve, the exactness of Lodge, the mastery of summary statement in Bennett, the steady good sense in Harkness, and the critical carefulness of Allen and Greenough." But we fear that the brilliancy of such a composite photograph would have been overpowering, and the "*pueruli* for whom the book was made" have perhaps ground for thankfulness that Professor West has tempered it a little.

The scope of this Grammar is in precise terms limited to the requirements of the school. "If Latin grammar is to be understood and relished by boys, it must be confined to the most necessary facts, and these must be presented in a clear

and pleasing way. . . Living directness of statement, even at the risk of missing the finer shadings, is better than inanimate precision. . . Scientific grammar is not for boys, but for men" (p. vii). But these requirements are by no means slight, and there is certainly an irreducible minimum. School Latin does not differ from college Latin by being written in words of one syllable, which in turn involve syntactical problems of like simplicity. A school grammar should present, and present adequately, the standard usage of the best period, and it must to some extent take account also of those individual peculiarities of phrase which mark every writer, whether he be a Sallust, a Vergil, or a Cicero. For whether the benefit to be gained from the study of Latin be the increased power to use aright the incomparable resources of our native tongue, or æsthetic pleasure, or merely mental discipline, the desired result can only be attained, in school as in college, by cultivating an alertness and nicety of observation, and a clarity of analysis and comprehension that, with all due respect to Professor West, must always take account of "the finer shadings." In the opinion of the present reviewer even Professor Bennett's Grammar would be improved by some additions, and especially by some amplifications of statement. If this be reasonable, what shall we say of our author who, tho using much larger type and wider spacing, gives to Syntax only 106 pages as against 123 in Bennett's book, and 121 in the smaller work by Lane and Morgan?

But orthodoxy is a relative term. Perhaps some day we shall have to be content with "Six Weeks in Latin Grammar." Those who agree with our author's estimate of the "necessary facts" (the principle is so nicely applied that in section 244 we are told "*abs* is rare" in order that the boy's overtaxed memory may be spared the burden of the specific phrase *abs te*) will find the book as a whole well conceived and logically developed. The statements are cast in an extremely lucid form, and are in many cases deserving of special commendation for their succinct accuracy. A typical instance is the phrasing of the law for the termination of the ablative singular in adjectives of the third declension, having one ending. One of the best things in the book is the handling of

subordinate clauses, which are classified under three main *uses,* as noun, adjective, or adverb, distributed under three main *forms,* as introduced by a conjunction, a relative, or an interrogative. The typography, with its large yet judiciously varied print, gives the reader positive pleasure, and puts this Grammar in a class by itself.

And yet—we have a suspicion that our author must be an academic philosopher. He seems so clearly to approve of the maxim *Modo hoc, modo illud probabilius.* If the book is to present only "necessary facts," why is the genitive *amphorum* cited in section 62, and in 105 the plural *cæli*—a form which occurs once in Lucretius, and in Arnobius, and which is for the rest a Hebraism of the Church writers? Why *rare* (236)? Is our *puerulus* to browse in Columella? He is credited after all with a remarkable memory, for he is expected to assimilate whole tables of endings; witness sections 99, 167, 168. But surely boys should deal with the "living directness" of paradigms, not the "inanimate precision" of isolated endings. On the other hand, we find under Accent (38) not a word about enclitics, *ac* is omitted from the list in 34, and *fio* in 36. Nothing is said of the declension of *ambo* in 131 nor of the construction with *fretus* in 389. We are favored in 361-62 with a list of fourteen words involving the construction in question, but are denied the familiar *peto, postulo, quæro* in 319. Incidentally, it is a pity that Professor West did not take from the Ellendt-Seyffert Grammar, of which, in the preface, he expresses his high appreciation, the statement of the limitations of the use of two accusatives with *rogo,* perhaps a "finer shading," but an exceedingly serviceable one. In 530 there is no mention at all of *posteaquam,* of which Merguet's *Lexicon to Cicero's Speeches* gives ninety-two cases to eighteen of *postquam,* and the present tense is by fair implication excluded from use with conjunctions of this class. But there are inconsistencies of a more pronounced character. *Alterius* by inevitable inference from section 36 has a long penult (which is probably correct for prose); in 112 its penult is short. In 677 we learn that the order in *mihi crede* "is never changed," but our *puerulus* with his retentive memory will recall the fact that he read in 330

crede mihi. But perhaps, as our friend Rip Van Winkle would say, "This time doesn't count." It is certainly vitally important that the syntax allowed in poetry should be sharply distinguished from the normal prose usage. But Professor West, while for the most part utterly ignoring the distinction, specifically makes it in some cases, as in 329. The results are absolutely misleading, and will make accurate Latin prose composition an impossibility. To cite two of the most vexatious cases: in 496 *ne* with the Imperative is treated as interchangeable with *noli* and the Infinitive, and—*O tempora! O mores!*—in 258 the paradigm sentence for *quamvis* shows the Indicative, which in 572 we are in precise terms and without any limitation informed that it may take. And yet, in spite of utter disregard in this case of Cicero's feelings, our author is so considerate of his usage in 251 as to say that "*igitur* is postpositive," inferentially always, for in 252 the same statement is made about *enim.* But our bright *puerulus* will note, as he reads Sallust's *Catiline,* that *igitur* is always prepositive. In 669 *fere omnes* is cited as an instance of the rule that adverbs regularly precede. But in this phrase the normal order is *omnes fere.* Reid's note on Cicero's *Cato Maior* 1, 2, is rather destructive of the distinction made in 236 between *certe* and *certo.* In regard to the construction with verbs of memory (364-65), and in particular the statement that *recordor* "takes the genitive, but oftener the accusative," we would respectfully refer Professor West to Dr. Babcock's monograph in the Cornell Studies, published last year. But our keenest curiosity has been aroused by section 233. *Oportet tibi, you ought—you must.* It is a pity that we cannot have Quintilian's opinion of this phrase.

In the *Autocrat of the breakfast table* Dr. Holmes speaks somewhere of the futility of arguments on special points between people who differ on the fundamental principles upon which these points depend. It is perhaps not impossible that some of the cases of omission or inclusion here criticised may seem to some a logical outcome of Professor West's conception of the "necessary fact." But the majority of them cannot be so explained. Simplicity is an admirable quality; but a simplicity which is achieved by the exclusion of inherent

difficulties (*i. e.*, "finer shadings," *vide* the treatment of *quamvis*), creates so false an impression as practically not to be true at all. In this case the problem, or rather, the series of problems, was exceedingly difficult, and perfect consistency perhaps almost unattainable. But ability to reason accurately rests ultimately upon ability to make a just discrimination between two sets of closely related ideas, and it is our firm conviction that for the development of this inestimable power education has at its command no more effective instrument than Latin syntax, when properly taught. It is along this path that a school grammar should guide the growing mind. But both for the analysis of the sentences of the great Latin authors and for the rendering of idiomatic English into no less idiomatic Latin in prose composition, the student will need more, far more, than he can get from this volume in its present form.

NELSON G. MCCREA.

COLUMBIA UNIVERSITY

Elementary physical geography—By WILLIAM MORRIS DAVIS, Sturgis-Hooper Professor of Geology in Harvard University. Boston: Ginn & Co., 1902. xviii, 401 p. $1.50.

During the latter part of the nineteenth century, three distinct phases have appeared in the manner of presenting the subject of physical geography to the young student. In the first of these a general survey was made of the surface of the earth as a whole, and the important features were described. The result was that the pupil studied the earth's surface in the same cold and unappreciative manner that he would the distant members of our planetary system.

In the second phase an attempt was made to present to the student an outline of our present knowledge concerning the whole realm of terrestrial physics, with the result that a mass of information that no young pupil could possibly assimilate was packed between the four hundred pages of a 12mo textbook with a condensation that would put to shame an encyclopedia. The main details of fact and theory of an independent science were crammed into a space of fifty pages, in which no place could be found for the insertion of those

details without which a clear understanding of the matter presented would be absolutely impossible.

In the third phase, that upon which we are now only fairly entering, the student has presented to him the physiographic processes which have caused the surface of the earth to assume its present conditions, and the local illustrations of this work are pointed out on every hand. Moreover, it is made plain that these changes are now in progress on as large a scale as ever, and that while we use the rivulet and its limited borderland as an illustration of the mightier changes on the earth's surface, these examples are at the same time actually taking a part in the production of those widespread changes. Thus the condition of the earth's surface is made a matter of live interest, and is not viewed entirely as a matter of ancient, yes, very ancient, history. The various departments of terrestrial physics are drawn upon for information only so far as is absolutely necessary for making plain the action of physiographic processes, and the details of astronomy, geology, and meteorology are rightly left to separate treatises, where there is space for their proper development and presentation.

Professor Davis had been taking an active part in developing the latter method in the systematic instruction offered the students in his department in Harvard University which he had succeeded in making one of the most influential centers in the country in the field of educational geography. The results of this experience were given to the public some years ago in a text-book of high-school grade. He has written the present work for the use of pupils in the last years of the grammar school or the early years of the high school.

Professor Davis's arrangement of his material is just that which he has found necessary for a logical presentation of the subject. He begins with the earth as a unit or whole, or, as he himself puts it, the earth as a globe, and briefly states those conditions and properties pertaining to the earth as such, which are important in themselves and which it is necessary to know something about in connection with the matter subsequently treated.

In any brief treatment of physical geography there must be taken for granted a certain preliminary training in geographi-

cal conceptions which is furnished by the usual elementary courses in geography which are carried thru some years in the ordinary primary-school curriculum. Basing his plan upon this general knowledge, Professor Davis begins his detailed treatment of his subject with a consideration of the atmosphere.

Instead of adopting a common practice of presenting a systematic array of facts in regard to the atmosphere such as ought to appear only in a treatise on meteorology, the author has dwelt at sufficient length on those atmospheric phenomena which must be used to help account for the physiographic processes which he is called upon to outline and explain. The same philosophical spirit which so strongly marks Professor Davis's *Elementary meteorology* is displayed in this presentation. The oceans come next in the course of treatment, and for several reasons. It is impossible to properly treat land forms without continual appeals to the effects of water action, and the great terrestrial reservoir of course plays a most important part in this matter. The enormous extent, both absolute and relative, of the water surface gives it direct claims to early consideration; but a very important fact also is that the great uniformity of water conditions, as compared with those of the land, makes the simpler treatment of the former a very good preliminary preparation for the necessarily much more complex treatment of the latter.

The chapter on Mountains is one of the most apparently revolutionary in the whole book. The complexities of mountain formations are here explained in a manner so simple as to be readily comprehended by very youthful pupils. Many a teacher, too, who has struggled to obtain a clear idea of this subject, will be delighted at the manner in which Professor Davis has presented this long puzzling matter.

The list of questions to be found at the end of each chapter will prove particularly useful to teachers, for not only are they calculated to get at the very essence of the topics to which they refer, but they reflect the most modern aspects of the science as displayed in the text.

FRANK WALDO

CAMBRIDGE, MASS.

Inductive sociology—A syllabus of methods, analyses and classifications, and provisionally formulated laws—By FRANKLIN HENRY GIDDINGS. Pp. xviii+302. New York: The Macmillan Company, 1901. Price $3.00.

Experimental sociology. Descriptive and analytical. Delinquents—By FRANCES A. KELLOR. Pp. xvi+316. New York: The Macmillan Company, 1901. Price $2.00.

A small number of students of sociology has done practically everything that has been accomplished in casting sociological data into scientific molds. Notwithstanding the very substantial progress which has been made in the study of sociology during the last decade, thousands of pages of sociological literature contain little more than slices from loaves representing the special social sciences, buttered with a diffusion of words, made into sandwiches of convenient size, and put into lunch-baskets labeled "sociology." Literature of this description has done much to throw sociology into disrepute among sane people.

The reader need scarcely be told that Professor Giddings is one of the small group of sociologists alluded to above, and that the volume under review is a valuable addition to that class of sociological literature which contains a well-differentiated *nucleus,* and on the basis of which the future science of sociology must be developed. This nucleus and unifying principle of the *Inductive sociology* is found in the author's well-known principle of like-mindedness. This is the cord upon which a great wealth of suggested material is strung. The book is clear, strong, systematic, and logical from cover to cover. It is a unified and coherent whole—something almost unique in the class of books to which it belongs.

The secondary title, "A syllabus of methods, analyses and classifications, and provisionally formulated laws," is an exact description of the contents of the volume. Dogmatism is something entirely foreign to the author; yet his definitions, principles, and "provisionally formulated laws" are models of conciseness. Every chapter bristles with vigorous and clear-cut statements, many of which put definite content and scientific meaning into words of common usage; for instance, the definition and discussion of the word institution (p. 184). No one can read that paragraph without clarifying and crystallizing his earlier notions with respect to the word institu-

tion. Another illustration is found in the discussion of social force. The terms "social force" and "social forces" are used by thousands of persons. How many have attempted to define these terms? Professor Giddings supplies the definitions and distinguishes between social forces and socializing forces by limiting the former to processes of concerted volition arising in society already in existence and created by this society, while the socializing forces are the forces which create society (p. 69). Similar illustrations could be added by the score, and they would all reflect the clear logic and vigorous thought of the author. And it is this which gives the book value, not only to the sociologist, but also to the historian, political scientist, and economist.

The author naturally accepts for sociology the aid of all known methods (p. 10), but in the estimation of the reviewer Professor Giddings's greatest service in the present volume lies in the masterly manner in which he has succeeded in filling in the theoretical categories, the essentials of which had been published in earlier volumes, altho in less systematic form, with concrete material. The United States Census furnishes the finest collection of government statistics in the world. The resources of the census volumes have never yet been adequately exploited by students in the social sciences. Professor Giddings draws upon this and similar sources again and again, and the student who works out the many tables of the volume will see the social world in which he lives with clearer eyes. A single set of tables even throws valuable side-lights on almost any branch of social science.

The opposite of sociality, says Professor Giddings, is criminality. Miss Kellor's work on *Experimental sociology* may be regarded as an expansion of Professor Giddings's discussion of sociality classes. This volume was not prepared as a text-book, but rather as "an appeal to the sympathetic interest and co-operation of the public." It is a study of methods of investigation of delinquents and their treatment, together with suggestions for the prevention of criminality, based upon comprehensive and patient inquiries, observations, and experiments conducted by the author. The author gives us new glimpses of the social underworld. While the volume is by no means exclusively devoted to colored women convicts,

it nevertheless brings its chief contributions to this field of study. In reading the book one is impressed with the almost unlimited amount of disagreeable work, frequently under exasperating circumstances, which the author must have devoted to this work. Not every student would be willing to devote time and energy to marching enthusiastically thru "the most repulsive regions," as Professor Henderson truly characterizes this field of investigation in his Introduction to Miss Kellor's book.

According to the author, the methods and data of experimental sociology include those of anthropometry, psychology, and environment, and the purpose of her investigations is the "synthetical study of the causes of crime." She has visited many prisons, and her systematic studies have brought out many facts relating to characteristic criminal types, their influence on associates, and the prevalence among convicts of certain traits and qualities; such as suspicion, superstition, vanity, obstinacy, fear, etc. In the chapter on anthropometrical measurements, percentages are employed in expressing certain facts; thus, "of white criminals 66 per cent. were below 60, . . . of negroes 19 per cent. were below 60"; or, as in the following chapter on psychological tests, "13 per cent. of white criminals and 4 per cent. of negroes declared they could feel no pain at the maximum pressure." Expressions in this form are exceedingly numerous, and it would add strength to the book if the author would state, whenever practicable, how large the numbers are upon which these percentages are based. Averages and percentages *may* be extremely fallacious.

The author's experience in gathering data enables her to make detailed suggestions concerning permanent laboratories in penal and correctional institutions. If these suggestions are carried out, much valuable information will be secured and tentative formulations may be superseded by permanent conclusions. The author modestly disclaims ability to say a final word on the valuable studies which she has begun. The chapters on penal systems and defects in the penal and correctional systems should be impressed upon every officer who is connected with the administration of these institutions. The discussion of the relation between criminal sociology and

criminal jurisprudence brings out some facts which will be new to most readers, at least those in the North, and contains suggestions which are as novel as they are thoughtful and interesting.

The book as a whole is primarily a compilation of classified and largely original facts supplemented by interpretative comments of the author. The facts find application in many lines of study and open a field of inquiry which is capable of yielding valuable results.

B. H. MEYER

UNIVERSITY OF WISCONSIN

The elements of Greek—A first book, with grammar, exercises and vocabularies, —By FRANCIS KINGSLEY BALL, Ph. D. New York: The Macmillan Company, 1902. $1.00.

Mr. Ball is to be congratulated upon producing an elementary Greek book that is concise, clear, and—rarest of qualities in this kind—interesting. His aim thruout is to strip the study of its terrors. Beginners in Greek are too often frightened by the *sesquipedalia verba* of the grammars, too often confused by the premature consideration of such difficulties as the euphony of consonants and the principles of accent. Mr. Ball dilutes these difficulties, spreading them thinly over many pages, and giving in each lesson only enough for average capacity to assimilate. Thus the second lesson deals with oxytone feminine nouns of the first declension and the accent thereof. In the third (which is mainly a review of the second) the adjective and the article are introduced in the feminine, without necessitating new rules for accent; and the same method is pursued with masculines of the second declension in lesson 5. Especially to be commended is the educational soundness of teaching the passive voice before the middle. The principles of grammar are presented early, references being constantly made to pages 219-228, where the main points of syntax are briefly but clearly stated. Daily reviews are insisted on thruout, and cross-references abound.

The book should prove especially valuable as a preparation for Xenophon, as the reading lessons, the vocabularies, and the lists of verbs (pages 207-218), are based on the Anabasis.

H. J. BURCHELL, JR

COLUMBIA UNIVERSITY

X

NOTES AND NEWS

The Country School

So much has been said and written of late about the needs and policies of the schools in rural districts, and the problems which such schools present are so many and so important, that it is a satisfaction to take note of specific efforts to make successful application of the principles which are now generally agreed upon. County Superintendent Kern of Rockford, Ill., has recently published a pamphlet of some seventy-five pages, called "The country school and the country child," which shows what can be done for the betterment of rural school conditions, and how, by an educational officer of zeal and intelligence. The illustrations showing school-houses, school gardens, and school decorations, are admirable, and the library lists and courses of reading are suggestive and helpful.

Rockford and Winnebago county are in that part of Illinois and of this nation where some of the very best school work of the whole United States is done, and where the highest type of school spirit prevails among both teachers and pupils. We wish that Mr. Kern's work might be widely imitated by county superintendents in every part of the land.

Dr. E. E. White

By the death, on October 21, of Emerson E. White, elementary education in the United States is deprived of one of its most influential representatives and leaders. Varied as Dr. White's experience had been, it was the elementary school which interested him most—its administration, its course of study, its moral discipline, and the preparation of its teachers. From the foundation of the National Educational Association Dr. White had been prominent in its activities, and for a long time he was a conspicuous leader in its counsels. His books on education and his text-books have been much used for a generation, and

he had helped and stimulated thousands of teachers by his spoken words.

Dr. White's philosophy and his theory of education were robust and well-knit. They were not much influenced by recent scholarship, but they were clearly thought out and always cogently expressed. Dr. White had an uncommon felicity of expression, and when his utterances were tendered by strong feeling, he frequently rose to genuine eloquence. His tribute to Colonel Parker at Minneapolis in July last is an admirable example.

Dr. White's life was a long, an active, and a useful one. He will be greatly missed.

Three New University Presidents

The closing days of October were marked by the inauguration ceremonies, in rapid succession, of Frank Strong as chancellor of the University of Kansas, of Edmund J. James as president of North-Western University, and of Woodrow Wilson as president of Princeton. On each occasion the exercises were dignified and appropriate, and on each words of highest wisdom were spoken. President Hadley of Yale, in making the principal address at the University of Kansas, and President Wilson of Princeton, in his inaugural, put into forceful and eloquent words the fundamental principles and standards of judgment and appreciation, as to which the large majority of men and women engaged in the work of higher education are agreed. President James laid proper emphasis upon the naturalness of our, in some ways, unsystematic system of higher education, and its consequent value to us as a people.

These three gatherings offered cumulative evidence of the power of idealism in American education and of its force in shaping American life. Nothing is more false than the superficial judgment, often made, that the colleges and universities are caught in the current of materialism and commercialism, and have in consequence lost their old significance. This is the word, well-meant but untrue, of the time-honored *laudator temporis acti*. The colleges and universities of to-day know and teach an idealism that is far more profound and far more

stable than the idealism taught fifty years ago. The old idealism made science its foe, the new idealism counts science an ally.

The following paragraph from the London *Journal of education* for November shows that the manufacturers of bogus degrees are as active as ever. Cannot the school and college men of Illinois secure such action from the legislature this winter as will put an end to this particular form of fraud?

BOGUS DEGREES FROM BOGLAND

The following letter was forwarded to us for publication by Messrs. Paton. Comment is needless. Pigeons—or rather knaves and fools combined—there will always be, in spite of all warnings; but cannot the State of Illinois take measures to extirpate this University of rooks?

Private. TRUMERA, MOUNTRATH, IRELAND.
August 23, 1902.

DEAR SIR: I can procure the following Degrees for suitable persons. Ladies or Gentlemen, from an University, and College, both in the State of Illinois, America: LL. D., costing £13; Ph. D., £13; D. C. L., £13; D. D., £20; M. A., £8.

These Degrees are not sold in the ordinary sense of the term, but the American authorities, like others, must live.

I can give you a commission of £1 (one Pound) on each Degree, and 2s. 6d. for postage, total £1. 2s. 6d., which you can deduct before forwarding to me.

Yours truly,

RICHD. BRERETON, Ph. D., LL. D.

Messrs. J. & J. Paton.

P. S.—Diplomas are sent direct from America.—R. B.